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NEC Express5800/140Rc-4
User's Guide

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Keep this User's Guide at hand for quick reference at anytime necessary.

SAFETY INDICATIONS

Follow the instructions in this User's Guide for your safety to use the server.

The server contains components with possible danger, hazards that may cause by ignoring warnings, and preventive actions against such hazards.

Server components with possible danger are indicated with a warning label placed on or around them as well as described in this User's Guide.

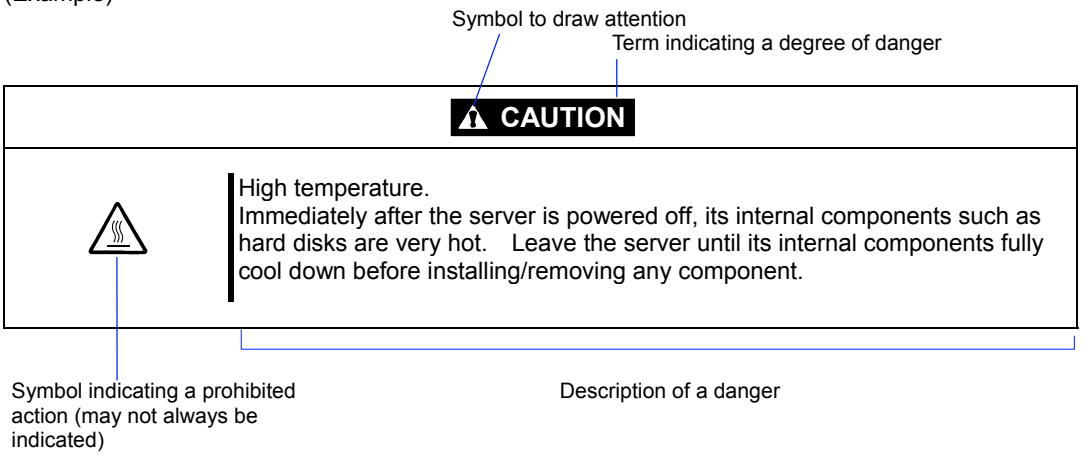
In the User's Guide or warning labels, "WARNING" or "CAUTION" is used to indicate a degree of danger. These terms are defined as follows:

⚠ WARNING	Indicates the presence of a hazard that may result in death or serious personal injury.
⚠ CAUTION	Indicates the presence of a hazard that may cause minor personal injury, including burns, or property damage.

Precautions and notices against hazards are presented with one of the following three symbols. The individual symbols are defined as follows:

	This symbol indicates the presence of a hazard. An image in the symbol illustrates the hazard type. (Attention)
	This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action. (Prohibited Action)
	This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard. (Mandatory Action)

(Example)



SYMBOLS USED IN THIS USER'S GUIDE AND WARNING LABELS

Attentions

	Indicates that improper use may cause an electric shock.
	Indicates that improper use may cause personal injury.
	Indicates that improper use may cause fingers to be caught.
	Indicates that improper use may cause the clip of a hand.
	Indicates that improper use may cause fumes or fire.
	Indicates a general notice or warning that cannot be specifically identified.
	Indicates that improper use may cause loss of eyesight due to laser beam.

Prohibited Actions

	Indicates a general prohibited action that cannot be specifically identified.
	Do not disassemble, repair, or modify the server. Otherwise, an electric shock or fire may be caused.

Mandatory Action

	Unplug the power cord of the server. Otherwise, an electric shock or fire may be caused.
	Indicates a mandatory action that cannot be specifically identified. Make sure to follow the instruction.

SAFETY INDICATIONS BY COLOR OF THE PARTS

Only green area is available for hot swap or hot plug operation. To avoid electric shock, disconnect all AC cords before accessing to other parts especially blue area inside the system.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Statement

Warning: This is a Class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures (EN55022).

BSMI Statement

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。



This system is classified as a CLASS 1 LASER PRODUCT. This label is located on the internal CD-ROM installed in your system.

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Momentary voltage drop prevention:

This product may be affected by a momentary voltage drop caused by lightning. To prevent a momentary voltage drop, an AC uninterruptible power supply (UPS) unit should be used.

Notes:

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PREFACE

Welcome to the NEC Express5800/140Rc-4 server.

The NEC Express5800 server holds powerful performance and employs the latest technology to implement a computer for the next generation. With its potential capabilities, the server may be used as the workstation PC that configures a client-server system and provides high-speed processing and superior reliability.

Read this User's Guide thoroughly to fully understand handling of the server and appreciate its functions to the maximum extent.

ABOUT THIS USER'S GUIDE

This User's Guide is a guide for proper setup and use of the server.

This User's Guide also covers useful procedures for dealing with difficulties and problems that may arise during setup or operation of the server. Keep this manual for future use.
The following describes how to proceed with this User's Guide.

How to Use This User's Guide

To aid you in finding information quickly, this User's Guide contains the following information:

Chapter 1 Notes on Using Your Server
includes information that needs attention to use the server. Make sure to read this chapter before setting up and using the server.

Chapter 2 General Description
includes information necessary to use the server, such as names and functions of its components, handling of the floppy disk and CD-ROM drives. It also includes requirements and advisory information for transfer and disposal of the server.

Chapter 3 Setting Up Your Server
tells you how to select a site, unpack the system, assemble the rack-mount subsystem, make cable connections, and power on your system.

Chapter 4 Configuring Your Server
tells you how to configure the system and provides instructions for running the BIOS Setup Utility and the Adaptec Configuration Utility, which is used to configure SCSI devices in your system. This chapter also provides information on baseboard jumper settings.

Chapter 5 Installing the Operating System with Express Setup
describes how to install the operating system.

Chapter 6 Installing and Using Utilities
describes how to install the utilities for the server. It also includes a description on using the attached CD-ROM "NEC EXPRESSBUILDER".

Chapter 7 Maintenance
provides you with all the information necessary to maintain successful operation of the server. This chapter also includes a description on relocating and storing the server.

Chapter 8 Troubleshooting
contains helpful information for solving problems that might occur with your system.

Chapter 9 Upgrading Your Server
provides you with instructions for upgrading your system with an additional processor, optional memory, optional add-in cards, hard disk drives, peripheral devices, and power supply.

Appendix A Specification
provides specifications for your server.

Appendix B Other Precautions
provides supplementary notes on using the server.

Appendix C IRQ and I/O Port Address
provides a list of factory-set IRQs and I/O port addresses assigned.

Appendix D Installing Windows Server 2003
describes how to install Microsoft Windows Server 2003 without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2003. See Chapter 5 for details.

Appendix E Installing Windows 2000
describes how to install Microsoft Windows 2000 without using Express Setup. Using the Express Setup tool is recommended for installing Windows 2000. See Chapter 5 for details.

Appendix F Product Configuration Record Table
provides a table to be filled with your server configuration.

Text Conventions

The following conventions are used throughout this User's Guide. For safety symbols, see "SAFETY INDICATIONS" provided earlier.

IMPORTANT: Items that are mandatory or require attention when using the server.

NOTE: Notes give important information about the material being described.

IN THE PACKAGE

The carton contains various accessories, as well as the server itself. See the packing list to make sure that you have everything and that individual components are not damaged. If you find any component missing or damaged, contact your service representative.

- Store the provided accessories in a designated place for your convenience. You will need them to install an optional device or troubleshoot the server, as well as to set it up.
- Make a backup copy of each provided floppy disk, if any. Store the original disk as the master disk in a designated place, and use its copy.
- Improper use of any provided floppy disk or CD-ROM may alter your system environment. If you find anything unclear, immediately ask your service representative for help.

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Chapter 1

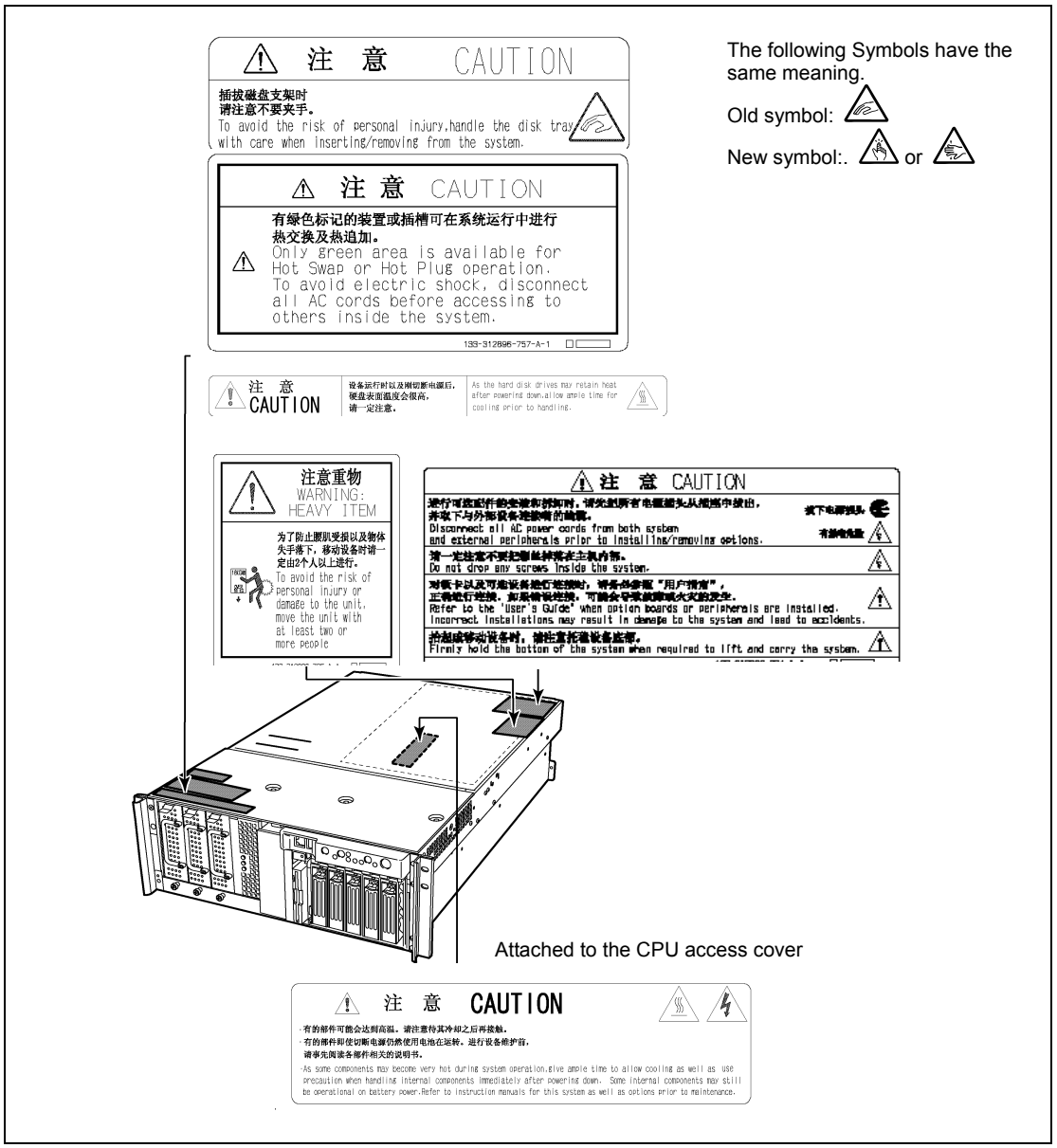
Notes on Using Your Server

This chapter includes information necessary for proper and safe operation of your server.

WARNING LABELS

The warning label is attached to components with possible danger or their vicinity in your server to inform the user that a hazardous situation may arise when operating the server. (Do not intentionally remove or damage any of the labels.)

If you find any labels totally/partially removed or illegible due to damage, contact your sales representative.



The following Symbols have the same meaning.

Old symbol:

New symbol:. or

Attached to the CPU access cover

SAFETY NOTES

This section provides notes on using your server safely. Read this section carefully to ensure proper and safe use of the server. For symbols, see "SAFETY INDICATIONS" provided earlier.

General

⚠ WARNING



Do not use the server for services where critical high availability may directly affect human lives.

Your server is not intended to be used with or control facilities or devices concerning human lives, including medical devices, nuclear facilities and devices, aeronautics and space devices, transportation facilities and devices; and facilities and devices requiring high reliability. NEC assumes no liability for any accident resulting in personal injury, death, or property damage if the server has been used in the above conditions.



Do not use the server if any smoke, odor, or noise is present.

If smoke, odor, or noise is present, immediately turn off the POWER switch and disconnect the power plug from the outlet, then contact your service representative. Using the server in such conditions may cause a fire.



Keep needles or metal objects away from the server.

Do not insert needles or metal objects into ventilation holes in the server or openings in the floppy disk or CD-ROM drive. Doing so may cause an electric shock.



Do not use the server in any unapproved place.

Install the server on a standard EIA 19-inch rack cabinet. Do not install the rack containing the server in a place inappropriate to the rack installation environment.
Failure to follow these instructions may cause some bad influences to be imposed on your server and other systems installed on the rack and also a fire or personal injury due to falling of the rack may occur. For the detailed explanation on the place where your server should be installed and the earthquake-resistant construction for the rack, refer to the manual attached to the rack or contact your service representative.



Always install the server on a rack conforming to the relevant standard.

Install the server on a rack confirming to the EIA standard for the server to be used. Do not use the server with installed on any other rack than standard EIA 19-inch rack or without the installation on a proper rack. Failure to follow these instructions may cause your server to operate incorrectly and/or personal injury or damages of surrounding devices to occur. Contact your service representative for the racks available for your server.

⚠ CAUTION



Keep water or foreign matter away from the server.

Do not let any form of liquid (water etc.) or foreign matter (e.g., pins or paper clips) enter the server. Failure to follow this warning may cause an electric shock, a fire, or a failure of the server. When such things accidentally enter the server, immediately turn off the power and disconnect the power plug from the outlet. Do not disassemble the server. Contact your service representative.

Notes on Installing and Accessing the Rack Cabinet

⚠ CAUTION



Do not carry or install the rack cabinet only by a single person.

More than one person is required to carry or install the rack. Failure to follow this instruction may cause the rack to fall to result in personal injury and/or breakages of surrounding devices. In particular, a high rack (such as 44U rack) is unstable if it is not fixed by stabilizers. More than one person must always carry or install the rack while they support it.



Do not install the rack cabinet so that the load may be concentrated on a specific point.

Install stabilizers on the rack so that the total load of the rack and devices mounted on the rack is not concentrated on a singe point or join more than one rack with each other to distribute the load. Failure to follow this instruction may cause the rack to fall to result in personal injury.



Do not install components on the rack cabinet only by a single person.

More than one person is required to install parts including the doors and trays for the rack. Failure to follow this instruction may cause some parts to fall to be broken and/or to result in personal injury.



Do not pull out a device from the rack if the rack is unstable.

Always pull out a device from the rack in the state that the rack is made stable (by the installation of stabilizers or earthquake-resistant construction).



Do not leave more than one device being pulled out from the rack.

Pulling out more than one device from the rack may cause the rack to be fallen. Only pull out a single device from the rack at a time.



Do not provide the wiring for the rack cabinet to exceed the rating of the power supply.

To prevent burns, fires, and device damages, the power supplied to the power supply in the rack shall not exceed the rating load of the power branch circuit. Contact your electric constructor or the local power company for the requirements on the wiring and installation of electric facilities.

Power Supply and Power Cord Use

⚠ WARNING



Do not hold the power plug with a wet hand.

Do not disconnect/connect the plug while your hands are wet. Failure to follow this warning may cause an electric shock.

⚠ CAUTION



Plug in to a proper power source.

Use a proper wall outlet. Use of an improper power source may cause a fire or a power leak.
Do not install the server where you need an extension cord. Use of a cord that does not meet the power specifications of your server may heat up the cord and cause a fire.



Do not connect the power cord to an outlet that has an illegal number of connections.

The electric current exceeding the rated flow overheats the outlet, which may cause a fire.



Insert the power plug into the outlet as far as it goes.

Heat generation resulting from a halfway inserted power plug (imperfect contact) may cause a fire. Heat will also be generated if condensation is formed on dusty blades of the halfway inserted plug, increasing the possibility of fire.



Use the authorized power cord only.

Use only the power cord that comes with your server. Use of an unauthorized power cord may cause a fire when the electric current exceeds the rated flow. Also, observe the following to prevent an electric shock or fire caused by a damaged cord.

- Do not stretch the cord harness.
- Do not pinch the power cord.
- Do not bend the power cord.
- Keep chemicals away from the power cord.
- Do not twist the power cord.
- Do not place any object on the power cord.
- Do not bundle power cords.
- Do not alter, modify, or repair the power cord.
- Do not secure the power cord with staples or equivalents.
- Do not use any damaged power cord. (Replace a damaged power cord with a new one of the same specifications. Ask your service representative for replacement.)



Do not use the attached power cord for any other devices or usage.

The power cord that comes with your server is designed aiming to connect with this server and to use with the server, and its safety has been tested. Do not use the attached power cord for any other purpose. Doing so may cause a fire or an electric shock.

Installation, Relocation, Storage, and Connection

⚠ CAUTION



Never attempt to lift the server only by yourself.

Your server weighs 33 kg (depending on its hardware configuration). Carrying the server only by yourself may strain your back. Hold the server firmly by its bottom with another person to carry it. Do not hold the front bezel to lift the server. The front door may be disengaged from the server, causing personal injury.



Do not install your server on a rack with leaving covers removed.

Do not install your server on a rack with the cover being removed. Failure to follow this instruction may reduce the cooling effect in the server to result in some malfunction and/or dusts to enter the server to result in a fire or electric shock.



Do not pinch your finger with rails or other components.

Note sufficiently that your fingers may not be caught between a rail and another mechanical part or cut by a rail at installation or removal of the server from the rack. When unlocking the latched server in the rack cabinet, use a screwdriver or tools to press the release levers on the slide rail. Pressing the levers with your finger may cause an injury.



Do not apply any load on the server pulled out from the rack.

Do not apply any load on the server pulled out from the rack. Doing so bends the frame of the server. Consequently, the server cannot be pushed back into the rack. Placing an object on the server may also cause personal injury if the server drops.



Do not install the server in any place other than specified.

Do not install the server in the following places or any place other than specified in this manual. Failure to follow this instruction may cause a fire.

- a dusty place
- a humid place such as near a boiler
- a place exposed to direct sunlight
- an unstable place



Do not use the equipment in the place where corrosive gases exist.

Make sure not to locate or use the server in the place where corrosive gases (sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, ozone, etc) exist.
Also, do not set it in the environment where the air (or dust) includes components accelerating corrosion (ex. sulfur, sodium chloride) or conductive metals. There is a risk of a fire due to corrosion and shorts of an internal printed board.

⚠ CAUTION



Do not connect any interface cable with the power cord of the server plugged to a power source.

Make sure to power off the server and unplug the power cord from a power outlet before installing/removing any optional internal device or connecting/disconnecting any interface cable to/from the server. If the server is off-powered but its power cord is plugged to a power source, touching an internal device, cable, or connector may cause an electric shock or a fire resulted from a short circuit.



Do not use any unauthorized interface cable.

Use only interface cables provided by NEC and locate a proper device and connector before connecting a cable. Using an authorized cable or connecting a cable to an improper destination may cause a short circuit, resulting in a fire.

Also, observe the following notes on using and connecting an interface cable.

- Do not use any damaged cable connector.
- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the server with loose cable connections.

Cleaning and Working with Internal Devices

WARNING



Do not disassemble, repair, or alter the server.

Never attempt to disassemble, repair, or alter the server on any occasion other than described in this manual. Failure to follow this instruction may cause an electric shock or fire as well as malfunctions of the server.



Do not look into the CD-ROM drive.

A laser beam used in the CD-ROM drive is harmful to the eyes. Do not look into or insert a mirror into the drive while the drive is powered. If a laser beam is caught in your eyes, you may lose your eyesight (the laser beam is invisible).



Do not remove the lithium battery.

Your server contains the lithium battery. Do not remove the battery. Danger of explosion if the battery is incorrectly replaced. Placing the lithium close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead lithium battery, contact your service representative to replace only with the same or equivalent type recommended by NEC. Do not disassemble the server to replace or recharge the battery by yourself.



Disconnect all the power plugs before accessing inside the server, or connecting the peripherals.

The server has two power cords.
Make sure to power off the server and disconnect the all power plugs from a power outlet before cleaning or installing/removing internal optional devices. Touching any internal device of the server with its power cords connected to a power source may cause an electric shock even of the server is off-powered.

Disconnect all the power plugs from the outlet occasionally and clean the plug with a dry cloth. Heat will be generated if condensation is formed on a dusty plug, which may cause a fire.

⚠ CAUTION



Hot surface

Immediately after the server is powered off, its internal components such as hard disks are very hot. Leave the server until its internal components fully cool down before installing/removing any component.



Make sure to complete board installation.

Always install a board firmly. An incompletely installed board may cause a contact failure, resulting in smoking or fire.



Protect the unused connectors with the protective cap.

The unused power supply cable connectors are covered with the protective cap to prevent short circuits and electrical hazards. When removing the power supply cable connector from the internal devices, attach the protective cap to the connector. Failure to follow this warning may cause a fire or an electric shock.



Do not touch any electrical components inside the server during the hot-swap replacement.

All power flows inside the server while the hot-swap replaceable components (PCI add-in cards, hard disk, cooling fan, and power supply). Do not touch the electrical components inside the server to avoid an electric shock.

During Operation

⚠ CAUTION



Avoid contact with the server during thunderstorms.

Disconnect all the power plugs from the outlet when a thunderstorm is approaching. If it starts thundering before you disconnect the all power plugs, do not touch any part of the server including the cables. Failure to follow this warning may cause a fire or an electric shock.



Keep animals away from the server.

Failure to follow this warning may cause a fire or an electric shock.



Do not place any object on top of the server.

An object placed on top of the server may fall down, resulting in damage to your property around the server.



Do not use a cellular phone or pager around the server.

Turn off the cellular phone or pager. Radio interference may cause malfunctions of the server.



Do not remove the cooling fans.

Only an authorized NEC service technician can remove the cooling fans from the server.

FOR PROPER OPERATION

Observe the following notes for successful operation of the server. Use of the server ignoring the notes will cause malfunctions or failures of the server.

- Install the server in a place that meets requirements for successful operation. For details, see Chapter 3, "Setting Up Your Server."
- Do not delete the hard disk partition exclusively provided for maintenance of the server although it may appear on the OS.
- Make sure to power off the server before connecting or disconnecting cables between the server and peripheral devices.
- Verify that the access lamp on the server is unlit before turning off the server or ejecting the floppy disk.
- The server management logic on your system board monitors and logs system voltage changes. When plugging the power cord to the system, you may experience 10 seconds delay from the time you press the POWER switch on the front panel. This is normal system operation and is required by the server management logic.
- When you have just turned off the server, wait at least 30 seconds before turning it back on.
- Do not turn off the server until characters following the "NEC" logo appears on the screen.
- Turn off the power and unplug the power cord from the outlet before relocating the server.
- Some software includes a command to eject the CD-ROM tray. Make sure that the front bezel is removed before running the command. Running this command with the front bezel installed may cause the CD-ROM tray or the media to hit against the front bezel, resulting in a failure of the server
- Clean the server on a regular basis. (See Chapter 7 for cleaning.) Regular cleaning proactively prevents various failures of the server.
- Lightning may cause a momentary voltage drop. To prevent this problem, it is recommended to use of an uninterruptible power supply unit.
- Check and adjust the system clock before the operation if any of the following conditions is applicable.
 - After carriage of the server
 - After storage of the server
 - After the server is entered into the pause state under the environmental condition enduring the server operation (temperature: 10°C - 35°C, humidity: 20% - 80%)
- Check the system clock at the rough rate of once per month. When the system clock is installed in a system requiring high time precision, it is recommended to use a time server (NTP server).
 If the system clock is remarkably delayed or advanced as the passage of time in spite of adjustment, contact your sales agent to ask maintenance.

- Store the unit under the storage condition (temperature: -10°C - 55°C, humidity: 20% - 80%, without condensation) to allow built-in devices and the unit to operate correctly in the next operation.
- Make sure to use optional devices supported by the server. Some non-supported devices may be physically installed/connected but cause failures of the server as well as a malfunctions of the server.
- NEC recommends you use NEC's genuine products. Some third-party products claim that they support the server. However, repair of the server due to a failure or damage resulted from use of such third-party products will be charged.
- For the disk which does not conform to the CD standard, the playback of such a disk with the CD drive is not guaranteed.

TRANSFER TO THIRD PARTY

The following must be observed when you transfer (or sell) the server or software provided with the server to a third party:

NEC Express server

Make sure to provide this manual along with the server to a third party.

IMPORTANT: About data on the hard disk

Be sure to take appropriate measures not to leak important data (e.g., customers' information or companies' management information) on the removed hard disk to any third parties.

Data seems to be erased when you empty "Recycle Bin" of Windows or execute the "format" command of the operating system. However, the actual data remains written on the hard disk. Data not erased completely may be restored by special software and used for unexpected purposes.

It is strongly recommended that the software or service (both available at stores) for data erasure should be used in order to avoid the trouble explained above. For details on data erasure, ask your sales representative.

Provided software

To transfer or sell any software application that comes with the server to a third party, the following requirements must be satisfied:

- All provided software applications must be transferred and no backup copies must be retained.
- Transfer requirements listed in "Software License Agreement" that comes with each software application must be satisfied.
- Software applications that are not approved for transfer must be uninstalled before transferring the server.

CONSUMABLES

Your server contains some components that are only good for a limited period of time and require replacement, such as fans, the internal CD-ROM drive, the floppy disk drive, and the mouse. For stable operation of the server, NEC recommends you replace these components on a regular basis. Consult with your service representative for replacement or the product lives.

DISPOSAL OF THE SERVER

Dispose the server, all the internal devices, floppy disks, and CD-ROMs according to all national laws and regulations.

IMPORTANT: For disposal (or replacement) of the battery on the baseboard of the server, consult with your service representative.

NOTE: If the real-time clock battery on the baseboard leaches its life, the following message appeared on the display while running the POST. Contact your service representative to replace the battery.

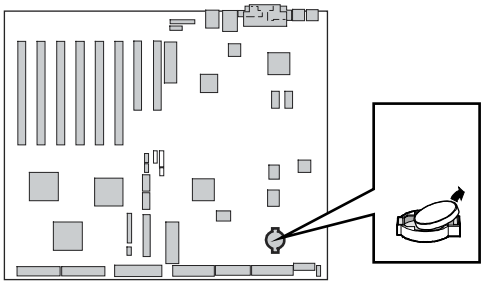
250 System battery is dead –Replace and run SETUP

⚠ WARNING

Do not remove the lithium battery.

Your server contains the lithium battery. Do not remove the battery. Danger of explosion if the battery is incorrectly replaced. Placing the lithium or nickel cadmium battery close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the failure of lithium battery, contact your service representative to replace only with the same or equivalent type recommended by NEC. Do not disassemble the server to replace or recharge the battery by yourself.



Baseboard

USER SUPPORT

When the server needs after-sales service, check if the warranty is still valid, and determine which service is necessary as indicated on the "Certificate".

Before Asking for Repair, do the following when the server appears to fail:

1. Check if the power cord and the cables to other devices are properly connected.
2. See Chapter 8 to find if your problem fits the description. If it does, take the recommended measure for it.
3. Check if the software required for operation of the server is properly installed.
4. Check the server using a computer virus detection program. Computer virus detection programs are available for purchase in stores.

If the server still appears to fail after you have taken the above actions, consult with your service representative immediately. Take notes on lamp indications of the server and alarm indications on the display unit before consultation, which may provide a significant help to your service representative.

When Having Your Server Repaired

Prepare the following when having your server repaired:

- Certificate
- Notes of the messages displayed on the display unit
- Error information*
- Records of the NEC Express server and peripheral equipment

* Error information includes the Error Message shown in Chapter 8.
Prepare the error information only when required by your service representative.

Advice for Health

The longer you keep using the computer equipment, the more you become tired, which may cause disorders of your body. When you use a computer, observe the following to keep yourself from getting tired:

Good Working Posture



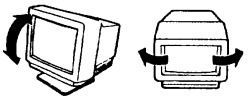
You have good posture if the following are satisfied when you use a computer:

- You sit on a chair with your back straight.
- Your hands are parallel with the floor when you put them on the keyboard.
- You look at the screen slightly lower than your eye height.

You have "good working posture" as described in the above when no part of your body is under excess strain, in other words when your muscles are most relaxed.

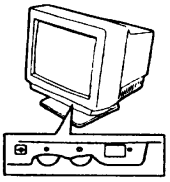
You have "bad posture" when you sit with your back hunched up or you operate a display unit with your face close to the screen. Bad working posture may cause eye strain or poor eyesight.

Adjustment of Display Unit Angles



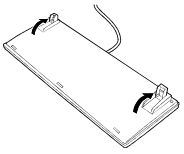
Most display units are designed for adjustment of the horizontal and vertical angles. This adjustment is important to prevent the screen from reflecting bright lights and to make the display contents easy to see. You will not be able to keep "good working posture" and you will feel more tired than you should if you operate a display unit without adjusting horizontal and vertical angles.

Adjustment of Screen Brightness and Contrast

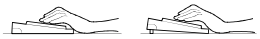


The display unit has brightness and contrast adjustment functions. The most suitable brightness and contrast depend on the individual and the working environment (well-lighted room or insufficient light). Adjust brightness and contrast so that the screen will be easy to see. An extremely bright or dark screen will give a bad effect to your eyes.

Adjustment of Keyboard Angle



The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



Cleaning of Equipment

Clean equipment regularly. It is difficult to see the display contents on a dusty screen. Keeping equipment clean is also important for your sight.

Fatigue and Rest



If you feel tired, you should stop working and do light exercises.

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Chapter 2

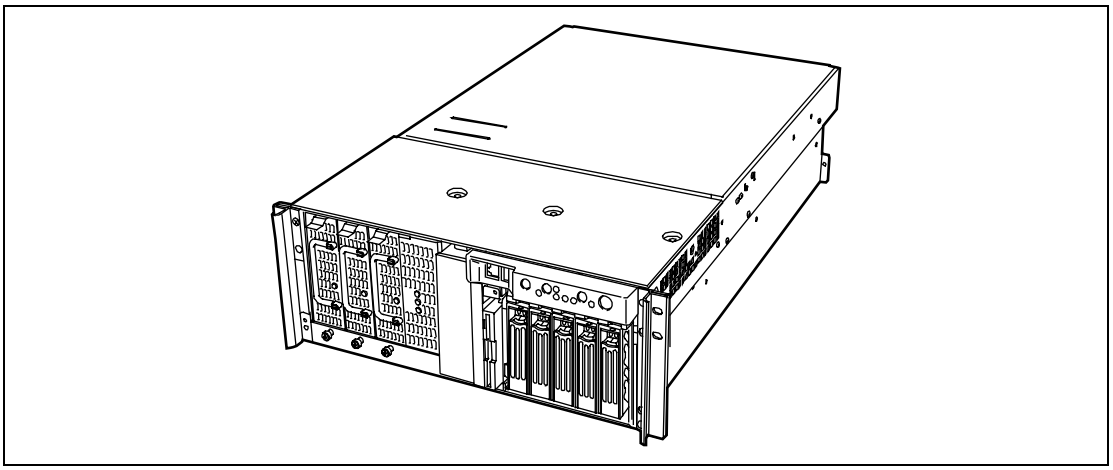
General Description

This chapter provides information that you should be familiar with before using the server. It includes names and functions of the components and features of the server.

OVERVIEW

Your server is a highly reliable, high-powered, fault-tolerant, high-capacity, multiprocessing server based on the Intel® Xeon™ Processor MP. It is a solid performer and offers the latest technology. The combination of compute performance, memory capacity, and integrated I/O provides a high performance environment for many server market applications. These range from large corporations supporting remote offices to small companies looking to obtain basic connectivity capability such as file and print services, e-mail, web access, web site server, etc.

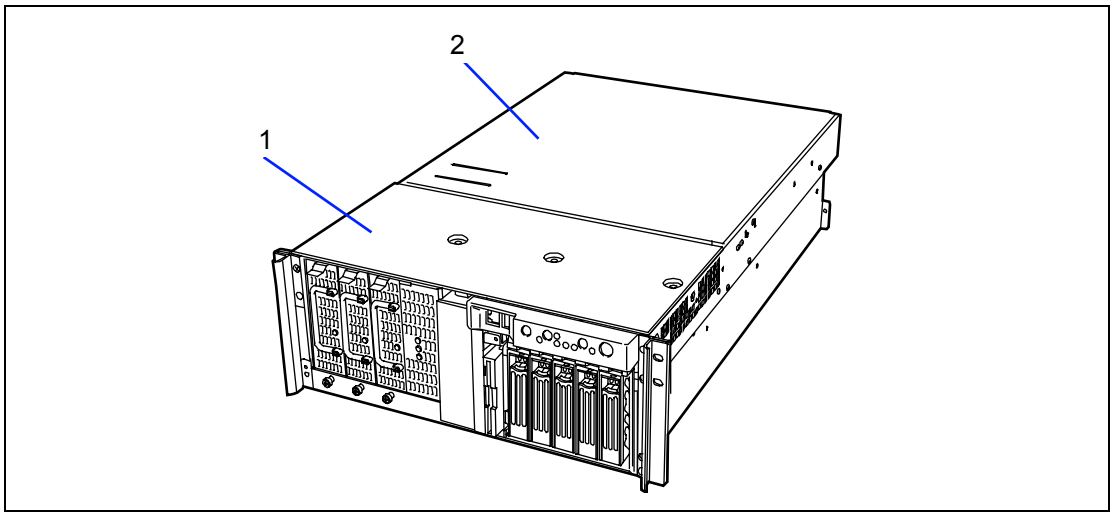
Your server is housed and available as a rack-mount system. Your server conveniently installs into a standard EIA 19-inch rack cabinet.



Your server includes a 3.5-inch diskette drive, a CD-ROM drive, a 3.5-inch hard disk bay, and removable media device bay. The 3.5-inch hard disk bay supports up to five 1.0-inch SCSI hard disk drives that can be swapped in or out of the system without powering it down, if RAID functionality is configured in the system.

As application requirements increase, you can expand your server with an additional processor, additional memory, add-in boards and peripheral devices: tape devices, CD-ROM, and hard disk drives.

Top View



1 Front access cover

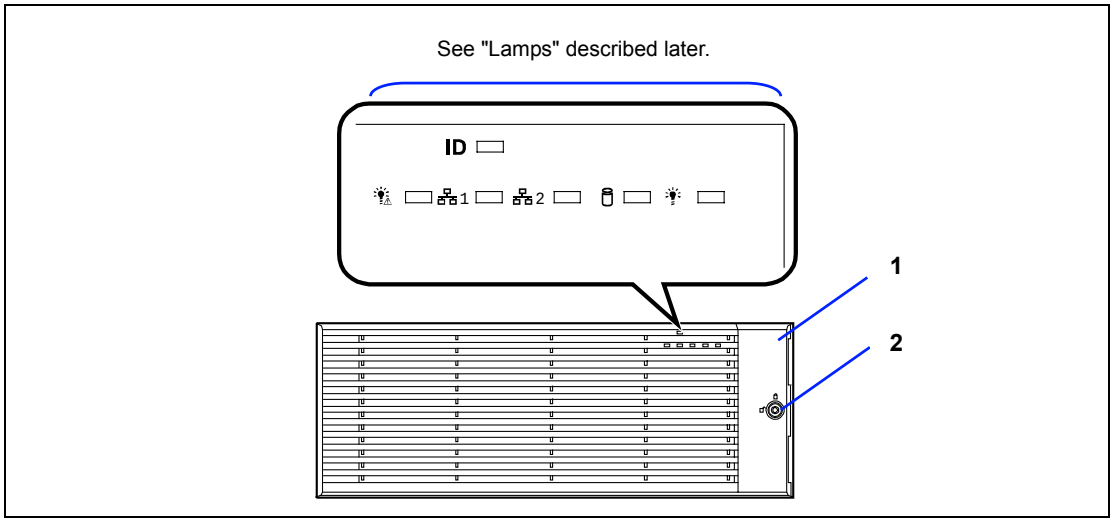
Open the front access cover

- to replace any defected fan with a normal one. The fans are hot-swappable.
 Do not remove any fans which are not defected.
 If a fan is defected, do not replace it by yourself but contact your service representative to request the replacement.
- to install or remove optional 5.25-inch device and change some internal cable connections.

2 Rear access cover

Open the rear access cover to install or remove optional PCI boards, optional processors and DIMMs.

Front View

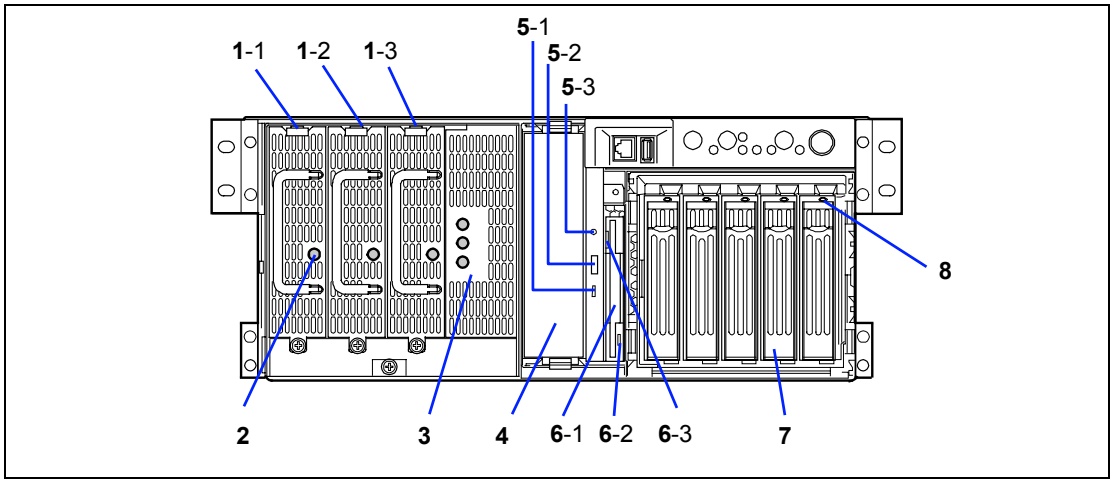


1 Front bezel
Remove the front bezel when you access to the POWER/SLEEP switch, the CD-ROM drive, or the floppy disk drive or install or remove a hard disk drive from the 3.5-inch hard disk bay. The front bezel can be locked by using the attached security key.

2 Key hole
Insert the security key to lock/unlock the front bezel

Front View (with Front Bezel Removed)

See Chapter 8 for detail information on lamp indication.



1 **Power supply unit**
The power supply unit supplies DC powers to the server. The slot **1**-3 is for optional slot.

2 **Power lamp**
When the power of the server is turned on, the lamp goes on green.

3 **AC Standby lamp**
If the power cord is connected to the AC inlet to supply AC power to the power supply unit, the lamp goes on green except for the lamp indicated AC_R. If the power system of the server is in the redundant function, after turning on the server, the lamp indicated AC_R goes on green.

4 **5.25-inch device bay**
Backup tape drives may be installed in the 5.25-inch device bay.

5 **CD-ROM drive**
The CD-ROM drive reads data from the inserted CD-ROM.
5-1: Access lamp (lit orange during accessing)
5-2: CD tray eject button
5-3: Emergency hole

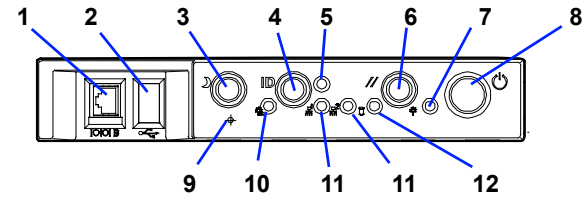
6 **3.5-inch floppy disk drive**
Insert a 3.5-inch floppy disk to the 3.5-inch floppy disk drive to read data from the disk or write data to the disk.
6-1: Eject button
6-2: Disk inserting section
6-3: Floppy disk access lamp (lit green during accessing)

7 **3.5-inch hard disk bay**
The 3.5-inch hard disk bay contains additional hard disk slots. Hard disks having the thickness of 1 inch can be inserted into the slots.
The SCSI IDs are defined as follows:
ID0 to ID4 from right to left

8 **Disk lamp (green/amber)**
The disk lamp is lit green if a hard disk installed in the server is accessed. If a hard disk is defected, the lamp is lit amber. During the rebuild processing, the lamp is lit green or amber alternately. (This occurs only in the disk array configuration.)

Front View (Switches and Lamps)

See Chapter 8 for detail information on lamp indication.



1 Serial port B connector
The serial port B connector is used to connect the server to a device with the serial interface. The server cannot be directly connected to a leased line through the connector.
IMPORTANT: Only the RJ-45 serial interface cable can be connected to this port. Do not connect any other interface cables such as the Ethernet cable. Doing so could damage the device, your server, or both.

2 USB3 connector
The USB3 connector allows the server to be connected to a device accepting the USB interface.

3 SLEEP switch
Pressing the sleep switch once causes the server to enter into the sleep state (power saving mode). Pressing the power switch in the sleep state recovers the machine to the normal state. (This function is supported by Windows 2000.)

4 UID (Unit ID) switch
Pressing the UID switch turns UID lamp (blue) located on the front panel and the rear panel on and off. The UID lamp located on the rear panel is visible through the rear of the chassis and allows you to locate the server you're working on from the rear of the servers on a rack.

5 UID lamp (blue)
Lights in blue when the ID switch is pressed.

6 RESET switch
The reset switch is used to reset the server.

7 POWER/SLEEP lamp (green)
Lights in green when the server is powered on. Goes off when the server is powered off. Blinks when the system is placed in the sleep mode.

8 POWER switch
The power switch is used to turn on/off the power. If you press the switch once, then the POWER/SLEEP lamp goes on and the power is turned on. If you press the switch again, the power is turned off. The system is forcibly shut down when the power switch is pressed continuously for four seconds or longer.

9 Dump switch
The dump switch is used to collect the event logs having occurred in the server.

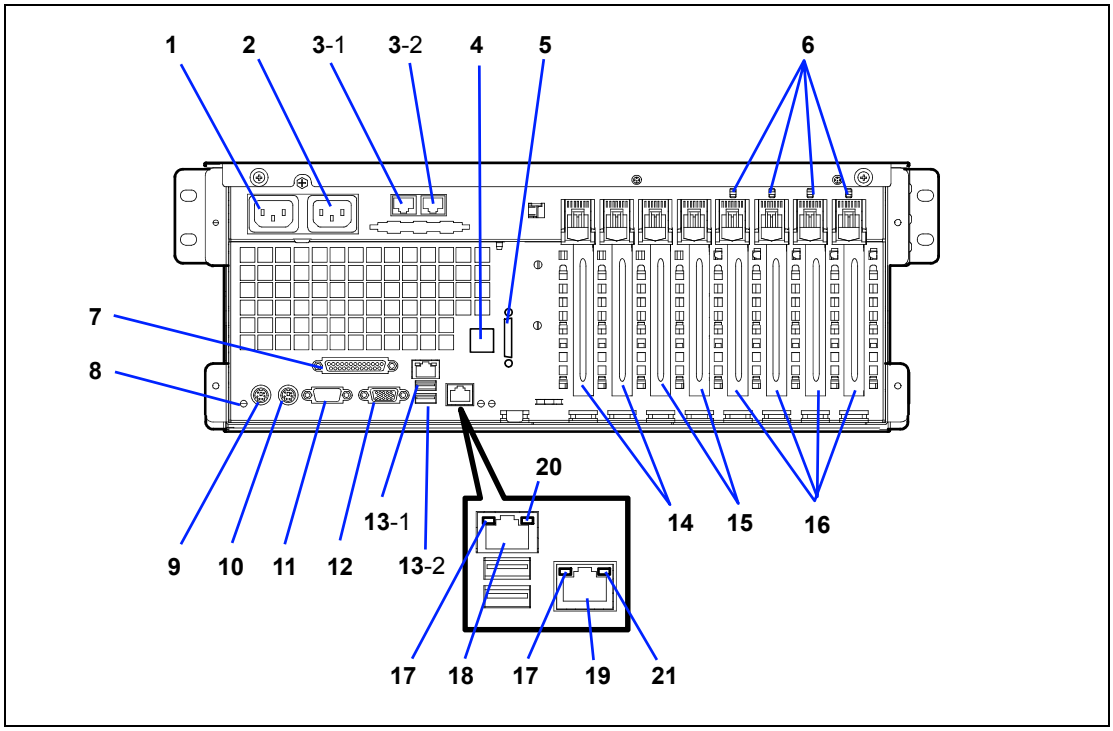
10 STATUS lamp (green/amber)
Lights in green while the server is in successful operation. When any error is detected, this lamp lights or blinks in amber.

11 LAN1/LAN2 ACCESS lamp (green)
Lights in green while the server is connected to the network. Blinking in green indicates the network activity. Numbers printed near the lamps indicate the LAN port number.

12 DISK ACCESS lamp (green/amber)
Lights in green while the internal hard disk is in access. When any one of the internal hard disks fails, this lamp lights in amber.

Rear View

See Chapter 8 for detail information on lamp indication.



1 AC inlet 1
The AC inlet 1 is connected with the power cord coming with the server.

2 AC inlet 2
The AC inlet 2 is used when the additional power supply unit is installed in the server.

3 ICMB-1 (left) ICMB-2 (right) connector
The ICMB connector is connected to a device having the ICMB interface.

4 Serial port B connector
The serial port B connector is used to connect the server to a device with the serial interface. The server cannot be directly connected to a leased line through the connector.
For using this port, the rear serial cable that comes with your server should be connected to this connector.

5 External SCSI connector
The external SCSI connector is used to connect the server to external SCSI devices. For the connection, attached SCSI cable is necessary and some cable connections must be changed on the baseboard.

6 PCI slot power lamp (green) (upper)
The PCI slot power lamp is lit when the power of the PCI slot being on.

6 PCI slot fault lamp (amber) (lower)
PCI slot fault lamp blinks when the hot plug PCI function is enabled with Windows 2000. The lamp also goes on if a fault occurs in the PCI board installed into the slot or the slot itself.

7 Printer port connector
The printer port connector is connected with a printer with the Centronics interface.

8 UID lamp (blue)
This lamp is lit when the UID switch is pressed.

9 Keyboard connector
The keyboard connector is connected with PS/2 type keyboard.

10 Mouse connector
The mouse connector is connected with the PS/2 type mouse.

11 Serial port A connector
The serial port A connector is connected with a device having the serial interface.
The server can't directly be connected to a leased line through the connector.

12 Monitor connector
The monitor connector is connected with the display unit.

13 USB-1 - USB-2 connectors
The USB-1 (upper) and USB-2 (lower) connectors are connected with devices accepting the USB interface.

14 Additional PCI board slots
Optional PCI boards (32-bit/33MHz) may be inserted into the slots.

15 Additional PCI board slots
Optional PCI boards (64-bit/100 MHz) may be inserted into the slots.

16 Additional PCI hot-plug board slots
Optional PCI hot-plug boards (64-bit/100 MHz) may be inserted into the slots.

17 LINK/ACT lamp
The LINK/ACT lamp shows the LAN access status.

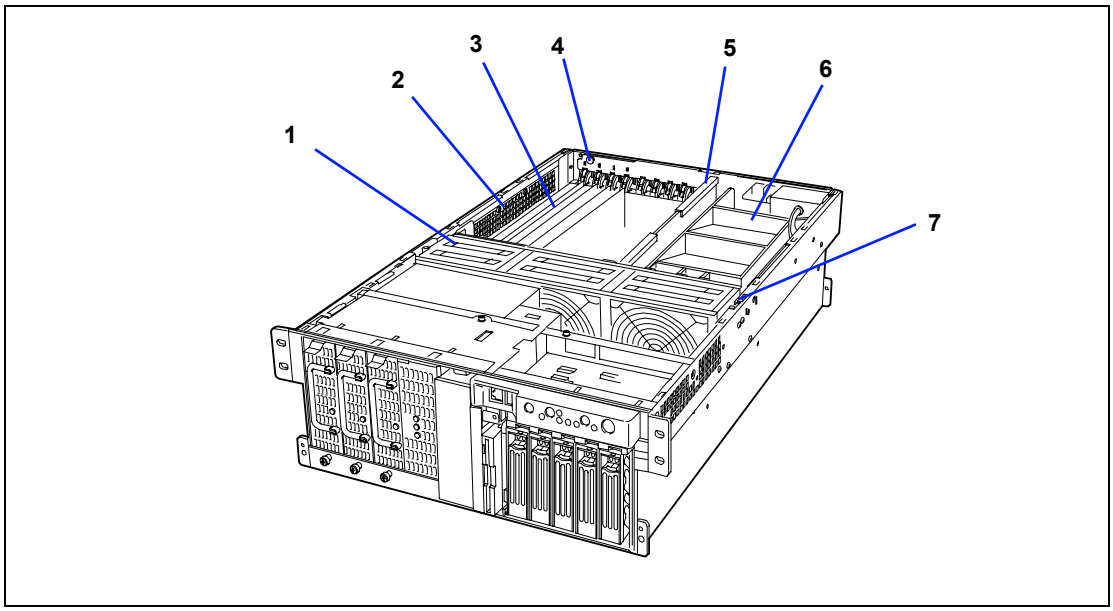
18 LAN1 connector
The LAN1 connector is connected with a network system on LAN. This port can be operated through 100BASE-TX or 10BASE-T interface.

19 LAN2 connector
The LAN2 connector is connected with a network system on LAN. This port can be operated through 1000BASE-T, 100BASE-TX or 10BASE-T interface.

20 100/10 lamp
The 100/10 lamp indicates the LAN transfer rate.

21 1000/100/10 lamp
The 1000/100/10 lamp indicates the LAN transfer rate.

Internal View



1 **Fan bay (6 Cooling fans are located in this bay.)**

2 **Electronics bay**

3 **Additional PCI board slots (8 slots)**

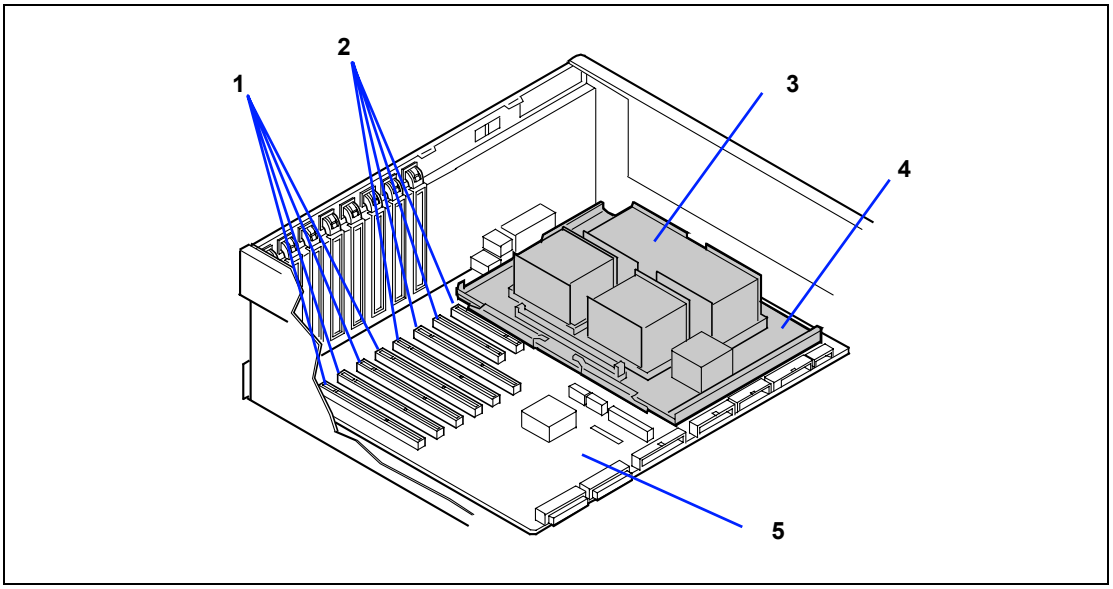
4 **Hot Plug PCI LED Board**

5 **Memory board**

6 **Processor board air duct**

7 **Cover open sensor**

Electronics Bay



1 **Hot-plug PCI board slots**

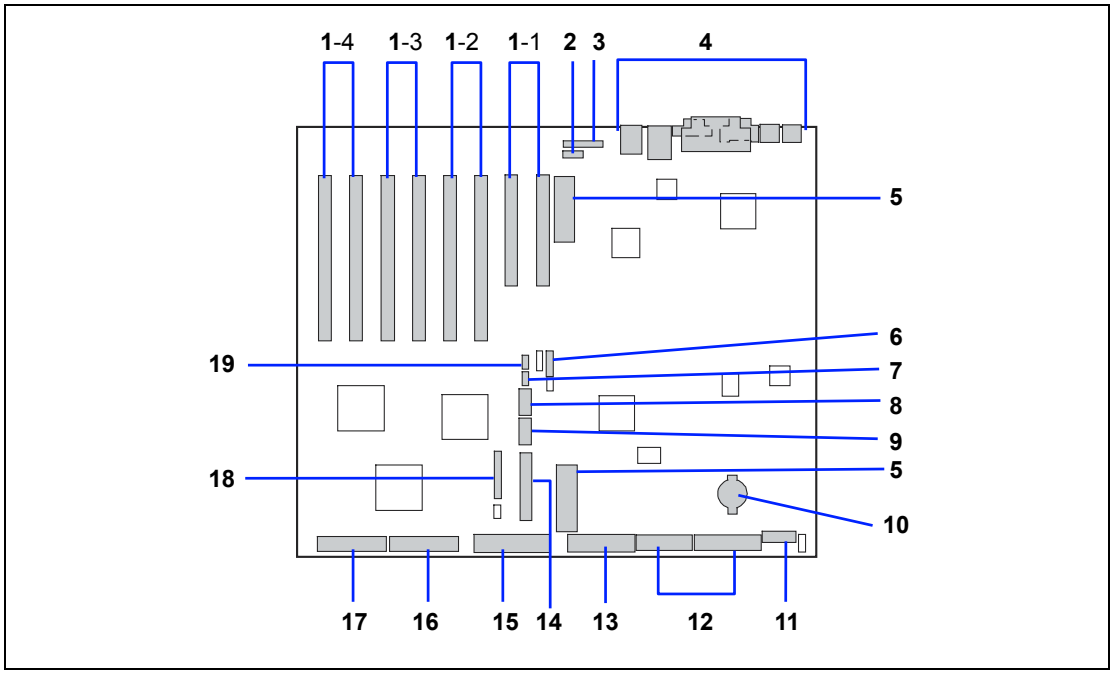
2 **Non-hot-plug PCI board slots**

3 **Dummy sponge**

4 **Processor board**

5 **Baseboard**

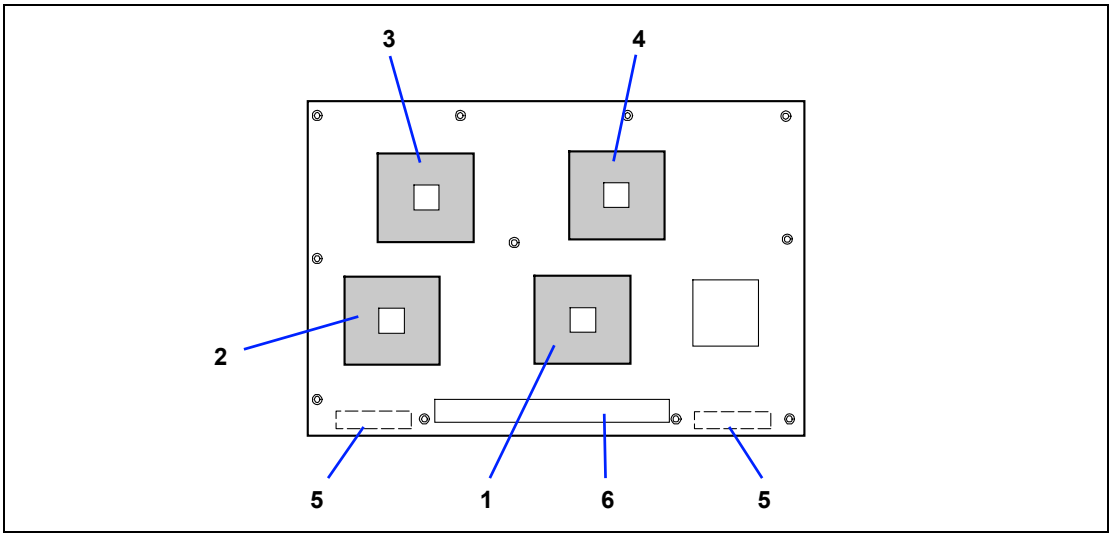
Baseboard



1 **Additional PCI board slots (8slots)**
- **1**-1: PCI#1 and 2 (1st PCI Bus, 32-bit, 33MHz, 5V PCI (arranged from right to left))
- **1**-2: PCI#3 and 4 (3rd PCI Bus, 64-bit, 100MHz, 3.3V PCI–X (arranged from right to left))
- **1**-3: PCI#5 and 6 (4th PCI Bus, 64-bit, 100MHz, 3.3V PCI–X Hot plug) (arranged from right to left)
- **1**-4: PCI#7 and 8 (5th PCI Bus, 64-bit, 100MHz, 3.3V PCI–X Hot plug) (arranged from right to left)

2 **Intelligent Chassis Management Bus (ICMB) connector**
3 **Hot Plug PCI LED Board connector**
4 **Rear panel I/O connectors (see page 2-7)**
5 **Processor board interface connectors**
6 **Jumper switch for clearing CMOS/password**
7 **Hot-swap back plane (HSBP Primary) connector**
8 **COM B connector**
9 **USB #3 connector**
10 **Lithium battery**
11 **Power connector**
12 **Power connector**
13 **Floppy disk drive connector**
14 **Front panel board interface connector**
15 **IDE connector (for CD-ROM drive)**
16 **Ultra320(B) connector (for 5.25-inch or external SCSI device)**
17 **Ultra320(A) connector (for 3.5-inch hard disk bay)**
18 **Cooling fan connector**
19 **Hot-swap back plane (HSBP Secondary) connector**

Processor Board



1 CPU1 socket (the default processor is installed in this socket)

2 CPU2 socket (the optional processor should be installed in this socket)

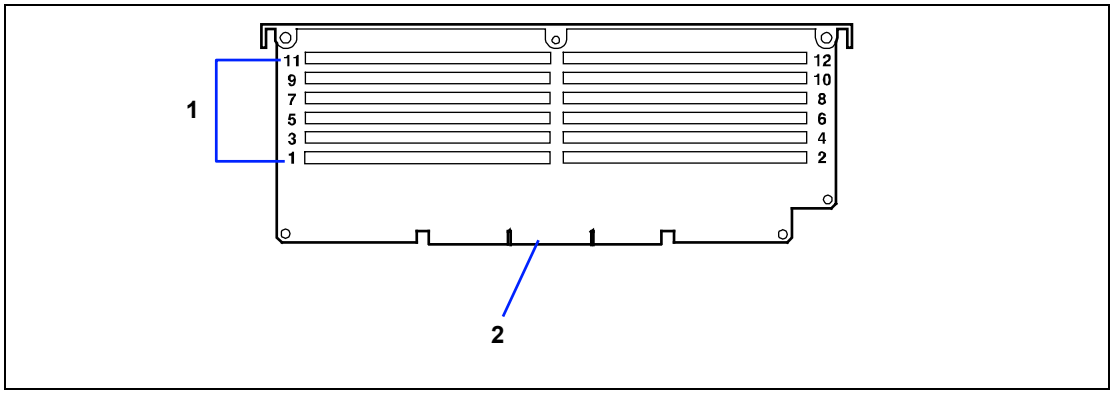
3 CPU3 socket (the optional processor should be installed in this socket)

4 CPU4 socket (the optional processor should be installed in this socket)

5 Baseboard interface connectors

6 Memory board interface connector

Memory Board



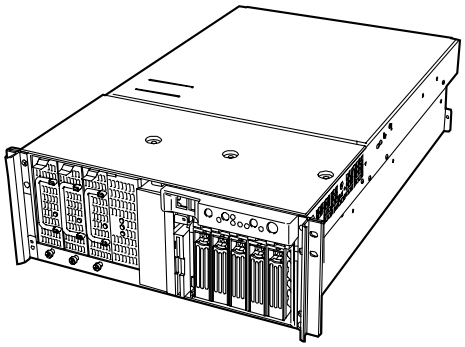
1 **DIMM socket**
The default DIMMs are installed in the sockets 1 to 4.
The optional DIMMs should be installed in the sockets 5 to 12.
To enable the online sparing / memory mirroring feature, see Chapter 9 "DIMM".

2 **Processor board interface connector**

STANDARD FEATURES

High performance

- Intel® Xeon™ Processor MP
 N8100-1023F: 2.20GHz/2MB
 N8100-1024F: 3GHz/4MB
- High-speed memory access
 (Supports PC-200-compliant registered ECC DDR DRAM)
- High-speed 1000BASE-T/100BASE-TX/10BASE-T interface
 (1000Mbps/100Mbps/10Mbps supported)
- High-speed disk access
 (Ultra320 SCSI x 2)



High-reliability

- Memory mirroring feature
- Online sparing memory feature
- Memory monitoring feature (single-bit error correction/ double-bit error detection)
- CPU/memory degradation feature (logical isolation of a failed device)
- Bus parity error detection
- Thermal sensor
- Error notification
- Internal cooling fan monitoring feature
- Internal voltage monitoring feature
- BIOS password feature
- Security feature (security lock)
- Redundant power supply
- Disk array (optional)

Management Utilities

- NEC ESMPRO
- NEC Management Workstation Application (NEC MWA)

Expandability

- Wide variety of optional I/O slots
 Two 32-bit/33 MHz PCI slots
 Six 64-bit/100 MHz PCI-X sots
 (four slots support hot-plug)
- Large memory of up to 24 GB
- 3.5-inch hard disk drive bay holds five hot-swap SCSI hard disk drives
- Remote power-on feature
- Up to four multi-processors are available for upgrade.
- Many SCSI device connection patterns
- USB interface

Many Available Features

- Graphic accelerator "RAGE XL" support
- El Torito Bootable CD-ROM (no emulation mode) format support
- POWER switch mask
- Software power-off
- Remote power-on feature
- AC-LINK feature
- Intelligent Platform Management Interface (IPMI) feature
- Baseboard Management Controller (BMC)
- Remote console feature

Self-diagnosis

- Power On Self-Test (POST)
- Test and Diagnosis (T&D)

Maintenance Features

- Off-line Maintenance Utility
- Memory dump feature using the DUMP switch

Power Saving Feature

- Sleep feature (available for Windows Server 2003/Windows 2000)

Easy and Fine Setup

- NEC EXPRESSBUILDER (system setup utility)
- Express Setup
- Configuration Diskette Creator
- SETUP (BIOS setup utility)
- SCSI*Select* (SCSI device utility)

Power Supplies

The system contains two auto-sensing 430 watt power supplies at an operating frequency of 50/60 Hz.

A third optional power supply may be added as part of a fault-tolerant hot-swap design. With three power supplies installed, in the unlikely event of a power supply failure, the load is transferred to the remaining power supply without interruption to normal operation. In this case the faulty power supply can be replaced without powering down the system.

> **NOTE:** The power supplies are not hot-swappable unless there are three supplies installed.

The power supplies are designed to comply with existing emission standards and provide sufficient power for a fully loaded system configuration.

Peripheral Bays

The system supports a variety of standard PC AT-compatible peripheral devices. The chassis includes these peripheral bays:

- Media bay for installing the standard 3.5-inch floppy disk drive (supports 720KB and 1.44MB floppy disk media) and the standard CD-ROM drive.
- A 5.25-inch device bay for installing half-height 5.25-inch peripheral devices such as an optional tape drives.
- The SCSI hard disk drive bay for installing up to five SCSI hard disk drives.
- The SCSI disk drives can be easily installed or removed. The drive carrier allows you to access to disk drives from the front of the system. If disk drives are provided with RAID configuration within the system, a disk drive can be swapped with another without power interruption in the system (hot-swap).

> **NOTE**: The SCSI hard disk drive bays contain a hot-swap back plane that require an 80-pin single connector attachment (SCA) connector on the drives that you install.

Memory Mirroring Feature

Memory mirroring is a new high-availability feature on your server.

Memory mirroring allows the server to continue operation if a DIMM error is encountered.

With memory mirroring, one degraded memory group is automatically disengaged and the operation is switched to the other memory group. This brings the reliability of the system to memory uncorrectable error without any service interruption and without compromising system availability.

To enabling memory mirroring feature, it is necessary to install the DIMMs in group #1 for a normal operation and to install the DIMMs in group #3 for standby.

In this case, it doesn't allow the system to install DIMMs in group #2.

Online Sparing Memory Feature

Online spare memory is a new high-availability feature on your server.

Online spare memory allows the server to continue operation if a DIMM begin to fail. When a pre-defined threshold for the maximum number of correctable ECC errors has been exceeded, online spare memory initializes the bank in standby (spare bank) and takes over the failing memory bank.

The memory bank that exceeds the error threshold can be replaced at the customer's convenience during a scheduled shut down.

With online spare memory, degraded memory is automatically disengaged and a fresh set of memory is used in its place. This brings the reliability of the system to the pre-failure level without any service interruption and without compromising system availability.

To enable online sparing memory feature, it is necessary to install the DIMMs in group #1 or in group #1 and group #2 for a normal operation and to install the DIMMs in group #3 for standby.

SAF-TE Logic

The SCSI backplane includes SAF-TE (SCSI Accessed Fault Tolerant Enclosure) logic that provides an interface to the disk subsystem that supports status signals, hot swapping drives, and enclosure monitoring.

The transport mechanism for the standardized alert detection and status reporting is the SCSI bus. Disk drives, power supplies, cooling fans, and temperature are continually monitored and the conditions then reported over the SCSI bus to the system. When used with RAID management software the user can be alerted of impending or imminent disk conditions requiring attention. This allows the user to react to conditions that could normally go unnoticed until data loss.

System Cooling

The chassis includes a hot-swappable fan module with six fans for cooling the processor(s), hard drives, and PCI cards. The fan system is located in the middle of the chassis to pull cooling air through the chassis.

System Board Features

The following subsections describe the system board major components.

Processor

The processor board accommodates one to four Intel Xeon processor MP with 512k/1MB cache in the FC-PGA2 package.

DIMM Memory

The memory board contains twelve 168-pin DIMM slots each supporting 72-bit ECC (64-bit main memory plus ECC) registered PC-200 Double Data Rate (DDR) DIMMs. Memory is partitioned in three banks. You may install a minimum of 512 MB (128 MB × 4) or as much as 12 GB.

The controller automatically detects, sizes, and initializes the memory array, depending on the type, size, and speed of the installed DIMMs, and reports memory size and allocation to the server via configuration registers.

> **NOTE:** Use DIMMs that have been provided by NEC. Contact your service representative or dealer for a current list of approved memory modules.

Onboard Video

The baseboard incorporates an ATI RAGE XL PCI graphics accelerator with 4 MB of video SDRAM that supports all standard IBM VGA modes. The embedded SVGA video subsystem supports:

- Pixel resolutions up to 1024 × 768
- CRT and LCD monitors up to 100 Hz vertical refresh rate

The baseboard supports disabling of the onboard video through BIOS Setup or when a plug-in video card is installed in any of the PCI slots.

SCSI Controller

The baseboard includes an embedded Adaptec AIC-7902, which contains two independent channels. You can enable or disable the SCSI controller in BIOS Setup. Both channels support 16-bit SE or LVD SCSI operations at the following speeds:

- Ultra320 (320 MB/sec)
- Ultra160 (160 MB/sec)
- Ultra 2 (80 MB/sec)
- Ultra Wide SE (40 MB/sec)

The baseboard provides active terminators, termination voltage, resettable fuses, and protection diodes for both SCSI channels. You can disable the onboard terminators in BIOS Setup.

Network Interface Controllers

NOTE: To ensure EMC product regulation compliance, the system must be used with shielded LAN cables.

The baseboard includes two network interface controllers (NICs):

- Intel 82550 NIC that supports 10Base-T and 100Base-TX networks
- Intel 82544 NIC that supports 10Base-T, 100Base-TX networks, and 1000BASE-T networks

The 82550 controller supports the following features:

- 32-bit PCI
- Integrated IEEE 802.3 10Base-T and 100Base-TX compatible PHY
- IEEE 820.3u auto-negotiation support
- Chained memory structure similar to the 82559, 82558, 82557 and 82596
- Full duplex support at both 10 Mbps and 100 Mbps operation
- Low power +3.3 V device
- IP checksum off-loading

NIC 1 can be used as both a network interface and server management interface.

The 82544 controller supports the following features:

- Direct 32/64-bit, 33/66-MHz interface to the PCI bus
- Integrated IEEE 802.3 1000BASE-T, 100BASE-TX, and 10BASE-T
- Integrated third-generation MAC and proven IEEE 803.3ab compatible PHY
- Full duplex support for 10-Mbps, 100-Mbps, and 1000 Mpbs operation
- Descriptor ring management architecture optimized to deliver both high performance and PCI/PCI-X bus efficiency
- Low power +3.3 V device
- IP and TCP/UDP checksum off-loading

System Board Management Controller (BMC)

Server management is concentrated in the System Board Management Controller (BMC). The BMC and associated circuitry are powered from a 5Vdc standby voltage, which remains active when system power is switched off, but the ac power source is still on and connected.

The BMC supports the NEC Management Workstation Application (NEC MWA), which allows remote server management via a modem or direct connection to a manager system. Events monitored by the manager system include over-temperature and over-voltage conditions, fan failure, or chassis intrusion.

Information on NEC MWA may be found on the NEC EXPRESSBUILDER CD-ROM included with your server.

One major function of the BMC is to autonomously monitor system management events, and log their occurrence in the nonvolatile System Event Log (SEL). The events being monitored include overtemperature and overvoltage conditions, fan failure, or chassis intrusion. To enable accurate monitoring, the BMC maintains the nonvolatile Sensor Data Record (SDR), from which sensor information can be retrieved. The BMC provides an ISA host interface to SDR sensor information, so that software running on the server can poll and retrieve the server's current status.

The BMC performs the following:

- Monitors server board temperature and voltage
- Monitors processor presence and controls Fault Resilient Boot (FRB)
- Detects and indicates fan failure
- Manages the SEL interface
- Manages the SDR Repository interface
- Monitors the SDR/SEL timestamp clock
- Monitors the system management watchdog timer
- Monitors the periodic SMI timer
- Monitors the event receiver
- Controls secure mode, including video blanking, diskette write-protect monitoring, and front panel lock/unlock initiation
- Controls Wake On LAN via Magic Packet support.

Degradation Feature

The degradation feature automatically isolates a failed DIMM, processor, or cooling fans to assure continuous operation of the server when the POST (Power On Self-Test, self-diagnosis program after power on) detects such a DIMM, processor, or cooling fans.

Failed DIMMs, processors, and cooling fan may be identified on the screen that the POST displays, or with the BIOS setup utility, "SETUP." They may also be identified on the system that has the NEC ESMPRO installed.

Remote Power-On Feature (Wake On LAN)

The remote power-on function turns on the server through a network. It sends a special packet from the management computer to a remote server to turn it on if the server is off-powered.

To enable this feature, you must select "Enabled" for "Wake On LAN" in the Advanced Chipset Control of the Advanced menu of the BIOS setup utility, "SETUP." (See Chapter 4.)

The remote power-on feature is not available in the following cases. Press the POWER switch once to start the OS, and turn off the server in an appropriate procedure.

- Abnormal previous system shut-down
- No power supply to the server (due to turned-off breaker, disconnected power cord, power blackout, etc.)

NOTE: Wake On LAN feature is supported in 100BASE-TX adapter on the baseboard. It is also supported in PCI slot #1 and #2 if the adapter which applies to Wake On LAN is installed.

AC-LINK Feature

When the power cord of the server is connected to an uninterruptible power supply (UPS) unit, the server supports the power linkage feature that enables control over the power supply from the UPS to the server. AC-LINK feature can be enabled or disabled with "AC-LINK" in the Server menu of the BIOS setup utility, "SETUP." (See Chapter 4.)

Security

To help prevent unauthorized entry or use of the system, the system includes a full lockable front panel and Server Management software that monitors the system intrusion switches.

Security with Mechanical Locks and Monitoring

The front bezel of the server contains a mechanical lock to prevent access to the front of the computer chassis.

The computer chassis includes an intrusion switch for the front access cover. When this cover is opened, the switch transmits an alarm signal to the system board, where server management software processes the signal.

Software Locks via the System Setup Utility

The BIOS SETUP Utility provides a number of security features to prevent unauthorized or accidental access to the system. Once the security measures are enabled, access to the system is allowed only after the user enters the correct password(s). For example:

- Enable the keyboard lockout timer so that the server requires a password to reactivate the keyboard and mouse after a specified time-out period – 2 to 120 minutes.
- Set and enable an administrative password.
- Set and enable a user password
- Set secure mode to prevent keyboard or mouse input and to prevent use of the front panel reset, power and sleep switches.
- Activate a hot-key combination to enter secure mode quickly.
- Disable writing to the floppy disk drive when secure mode is set.

NEC EXPRESSBUILDER

The CD-ROM that comes with your server contains a setup utility called "NEC EXPRESSBUILDER." When you have first installed the server or append features to the server, use the NEC EXPRESSBUILDER to set up your server.

Refer to Chapter 6 for details.

The major functions of the NEC EXPRESSBUILDER are:

- To install the OS.
 It installs an operating system.
- To diagnose the system.
 It diagnoses the server.
- To create a support disk.
 It copies utilities in the NEC EXPRESSBUILDER CD-ROM into a floppy disk to launch them from the floppy disk.
- To update the BIOS
 It updates the BIOS features of the server.
- To update the Windows System*
 It updates the several resources of Microsoft Windows Server 2003, Microsoft Windows 2000.
- To install the utilities*
 It install the management utilities of NEC ESMPRO and NEC MWA.
- To read the online documents*
 It opens the online document files (".pdf" files).

 * These functions are available under Windows system.

NOTE: Some features among those listed above can be used from the remote computer via cross cable, modem, or LAN (remote console). See Chapter 6 for details.

NEC ESMPRO

The NEC ESMPRO is server management software that runs on the OS. The NEC ESMPRO includes the NEC ESMPRO Manager for the server monitoring terminal and the NEC ESMPRO Agent for the NEC Express server.

> **NOTE:** For details of major functions of the NEC ESMPRO, system configuration and setups with the NEC ESMPRO, see Chapter 6. Available functions of the NEC ESMPRO depend on the OS you install. Ask your service representative for details.

Off-line Maintenance Utility

The Off-line Maintenance Utility is used for proactive maintenance and fault analysis of the server. Normally this utility is used by the maintenance engineer.

Refer to Chapter 8 for details.

System Diagnostic Utility

The system diagnostic utility contained in the NEC EXPRESSBUILDER is useful to prevent the hardware failures. See Chapter 7 for details.

NEC Management Workstation Application (NEC MWA)

The NEC Management Workstation Application (NEC MWA) is an application program for remote management of the server from a system management computer (a computer with the NEC ESMPRO Manager running) through a network. The MWA provides management on the process from power-on, POST execution, to OS boot-up of the server.

See Chapter 6 or online document in the NEC EXPRESSBUILDER.

USING YOUR SERVER

This section describes basic operations of your server including how to use devices such as the floppy disk drive and the CD-ROM drive. See Appendix B for notes on using the floppy disk, CD-ROM, and accessories including the keyboard and the mouse.

Front Bezel

Remove the front bezel to power on/off the server, to access the floppy disk drive and CD-ROM drive, and to install/remove hard disks to the 3.5-inch hard disk bay.

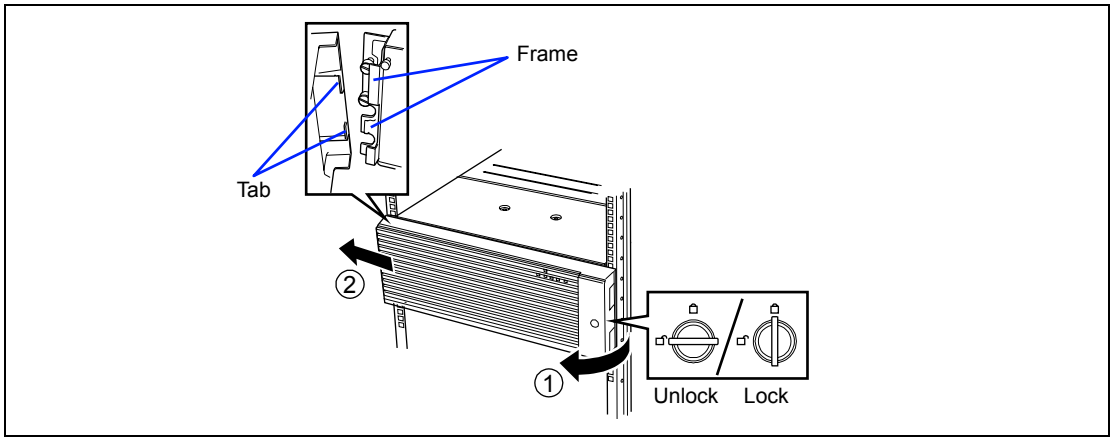
IMPORTANT: To open the front bezel, you must unlock the door with the provided security key.

Installing or Removing the Front Bezel

When turning the power of the server on/off, accessing to the floppy disk drive or CD-ROM drive, or installing or removing a hard disk on or from the 3.5-inch hard disk bay, first remove the front bezel.

IMPORTANT: The front bezel can be opened only when you unlock it by using the attached security key.

1. Insert the attached security key into the key slot and turn the key to the front bezel side with it pressed lightly to release the lock.
2. Hold the right end of the front bezel lightly to pull it toward you.
3. Slide the front bezel to the left a little to remove the tab from the frame and then remove the front bezel from the server.



To install the front bezel, latch the tab at the left side of the front bezel on the server frame. After the installation, lock the front bezel by using the key for security.

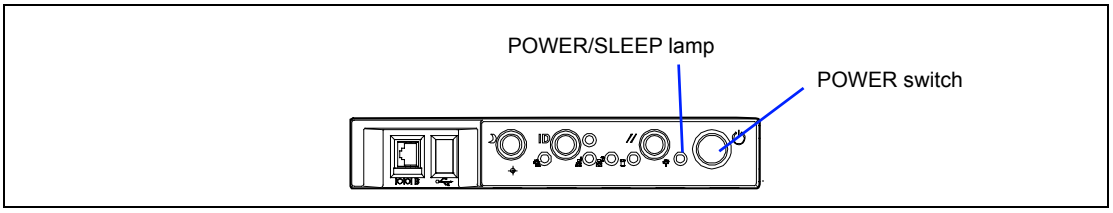
POWER Switch

Use the POWER switch to turn on/off the server.

Power On

Press the POWER switch on the front of the computer chassis.

The POWER/SLEEP lamp lights in green.



IMPORTANT:

- If the power cord is connected to a power control device such as a UPS (Uninterruptive Power Supply), make sure that the power control device is powered.
- If the power cord is connected to the server, an initial diagnosis of the hardware starts. The POWER switch does not work while in diagnosis. Wait for about 10 seconds, then press the POWER switch.
- Do not turn off the server until characters following the "NEC" logo appears on the screen.

POST

POST (Power On Self-Test) is the self-diagnosis feature saved in the baseboard of the server.

When the power of the server is turned on, POST automatically runs to check the baseboard, memory board, CPU, keyboard, and mouse. During POST messages indicating the starts of several BIOS setup utilities may also appear.

At the shipment of the server, it is set to have the NEC logo appear on the display unit during POST. Pressing **Esc** allows the information on the execution of POST to be displayed.

> **NOTE:** The information on the result of diagnosis by POST can be displayed from the start without the depression of **Esc** on the BIOS menu. If you desire it, change the setting of "Boot-time Diagnosis Screen" on "Advanced" of the BIOS configuration to "Enabled."

It may not always necessary to check the result of POST. Check the messages which may appear during POST in the following cases:

- Installation of the server
- Suspicion of failure
- Beep for many times in the period from power-on to OS start
- Appearance of an error message on the display unit

POST Flow

The flow of operations executed by POST is sequentially described below:

> **IMPORTANT:** Depending on the system configuration, message "Press Any Key" requesting key entry may appear on the display screen. This is requested by BIOS on an installed optional board. See the explanation described in the manual for the option and press any key.

1. After power-on, POST is activated to start the memory check. The message indicating the counted size of the base memory and that of the additional memory appears at the upper left corner of the display screen. In addition, the following message appears at the bottom of the screen.

```
Press <ESC> to enter boot selection menu, <Space> to abort memory test
Press <F2> to enter SETUP, <F4> Service Partition, <F12> Network
```

> **NOTE:** Pressing **Space** under the display of message "<Space> to abort memory test" allows the memory test to be skipped.

 It may take several minutes to complete the memory check depending on the size of the memory installed in the server. Similarly, it may take about a minute to display the proper information on the screen at rebooting.

2. Detects the SCSI controller built in the server and displays the message prompting the start of the SCSI BIOS setup utility (without any key entry for several seconds, POST is automatically continued). Press the proper keys according to the screen display.

```
Press <Ctrl> <A> for SCSISelect(TM) utility!
```

 Now press **Ctrl** + **A** to start the utility. See Chapter 4 for the setting procedures and features of the parameters.

 For example, the SCSI BIOS setup utility must be used in the following cases:

 - Installation of an SCSI device in the 5.25-inch device bay
 - Connection of an external SCSI device (The removal of the SCSI cable for 5.25-inch device in the server and the connection of the SCSI cable coming with the server (for external connection) are required.)
 - Modification of SCSI device connections within the server

 If the SCSI BIOS setup utility is terminated, the server runs POST from its start again.

 When more than one SCSI controller boards are installed on the PCI bus of the server, the messages indicating the starts of the SCSI BIOS setup utilities for the installed boards appear in the following order:

 PCI slot number PCI #1, PCI #2, PCI #3, PCI #4, PCI #5, PCI #6, PCI #7, and PCI #8.

3. Displays the SCSI ID numbers used by the connected SCSI devices on the screen.
4. If one or more disk array controllers are installed, displays the message prompting you to start the Disk Array BIOS setup utility.

 Start the utility according to the message if you need to change the settings. Refer to the manuals of the disk array controllers for details.

 Without any entry, any of the following messages appears.
5. Displays the message notifying you of the detection of the CPU and the connected keyboard and mouse.
6. Displays any of the following messages.

 Pattern 1:

   ```
   Press <ESC> to enter boot selection menu
   Press <F2> to enter SETUP or <F12> to Network
   ```

 Pattern 2:

   ```
   Press <ESC> to enter boot selection menu
   Press <F2> to enter SETUP, <F4> Service Partition, <F12> to Network
   ```

 Or

 Pattern 3:

   ```
   Press <ESC> to enter boot selection menu
   Press <F1> to resume, <F2> to enter Setup, <F12> to Network
   ```

 Pattern 4:

   ```
   Press <ESC> to enter boot selection menu
   Press <F1> to resume, <F2> to enter Setup, <F4> Service Partition, <F12> Network
   ```

 * The displayed message may vary depending on the device status.

NOTE: The operation or utility to be started at each key entry is described below. These operations or utilities may not always be started.

- **Esc**
 Press **Esc** to display the boot menu at the end of POST. This menu allows you to select the device to be started.

Boot Menu
1. CD-ROM Drive 2. +Removable Devices 3. +Hard Drive 4. IBA 4.0.19 Slot 0003 5. IBA 1.0.17 Slot 0103
<Enter Setup>

- **F2**
 Press **F2** to start the BIOS setup utility. Start the utility to change the setting of the server to that fit to the environment in which the server is used. In general, the setting may not be particularly changed by starting the utility excluding the case in which the previous message accompanying by an error message appears. See Chapter 4 for the setting procedures and features of the parameters.
- **F4**
 Press **F4** to start the Off-line Maintenance Utility from the maintenance partition. See Chapter 6 for the maintenance partition.
- **F12**
 Press **F12** to run the network boot.
- **F1**
 If message "Press <F1> to resume" appears, an error is detected during POST. See "Error messages during POST" for the information on the messages and the proper actions against the errors. If an error message appears, pressing **F1** allows the BIOS setup utility to be started.

7. When a password is set in the BIOS setup utility SETUP, the screen prompting you to enter the password appears after the normal termination of POST.

The password can be entered for up to three times. If you enter the password incorrectly all the time, the server cannot be started. In this case, turn off the power of the server, wait for about 10 seconds, and then turn on the power to start the server again.

IMPORTANT: Set the password only after OS is installed.

8. Starts OS at the termination of POST.

POST Error Messages

When POST detects an error, it displays an error message on the display unit screen. See Chapter 8 for POST error codes.

> **IMPORTANT:** Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

Power Off

Follow the procedure below to power off the server. If the power cord of the server is connected to a UPS, refer to the manual that comes with the UPS or the manual for the application that controls the UPS.

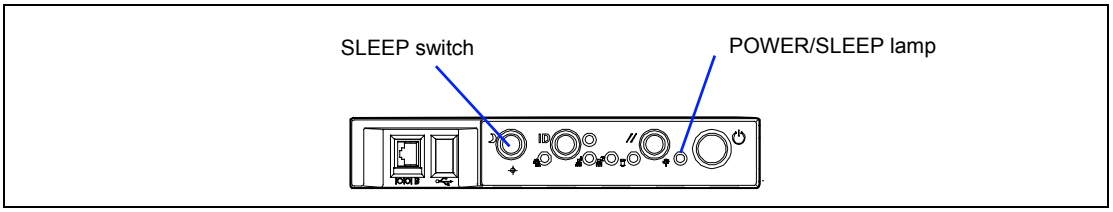
> **IMPORTANT:** Always allow POST to complete before turning off the server.

1. Shut down the OS.
2. Press the POWER switch on the front of the server.
 The POWER/SLEEP lamp goes off.
3. Power off peripheral devices.

SLEEP Switch

The SLEEP switch allows you to save almost all power of the server (power-saving mode or sleep mode).

NOTE: To use the SLEEP switch, an OS supporting the sleep feature is required. (Available for Windows 2000.)



Press the SLEEP switch on the front of the server to place the server in the power-saving mode. (The POWER/SLEEP lamp blinks.) In the power-saving mode, the server retains the memory data and the status of the previous operations.

To resume the original state, press the POWER switch. (It may take a little time to resume the original state.)

NOTE: The operational level in the power-saving mode depends on the OS in use. (Available for Windows 2000.)

IMPORTANT: Do not change system configuration while turning into the power-saving mode or in the power-saving mode. Otherwise, you may fail to resume the original state.

Floppy Disk Drive

Your server is provided with the 3.5-inch floppy disk drive on its front to write/read data to/from a floppy disk.

Your server supports the following 3.5-inch floppy disks:

- 2HD floppy disk (double-sided high-density track type)
 Stores data of 1.44MB.
- 2DD floppy disk (double-sided double-density track type)
 Store data of 720KB.

Make sure that the server is powered (the POWER/SLEEP lamp is lit) before inserting a floppy disk into the floppy disk drive.

When you completely insert the floppy disk into the floppy disk drive, the drive clicks and the eject button on the floppy disk is slightly pushed out.

NOTES:

- You cannot use a 1.2MB-formatted floppy disk.
- When an unformatted floppy disk is inserted, the message notifying that date read is not available and the message prompting formatting are displayed. Refer to the manual that comes with the OS to format the floppy disk.
- If the floppy disk contains a system, powering on or restarting the server with the floppy disk inserted boots the system from the floppy disk.

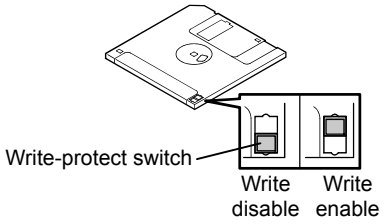
To eject the floppy disk from the floppy disk drive, press the eject button.

NOTE: Make sure that the floppy disk access lamp is unlit before ejecting the floppy disk. Ejecting the disk when the access lamp is lit may destroy the disk data.

NOTE: Use of the floppy disk

The floppy disk is an important data storage media with delicate structure and requires care. Keep the following notes in mind to use it:

- Insert the floppy disk into the floppy disk drive gently as far as it goes.
- Attach the label to the correct position.
- Do not write anything directly onto the disk surface with a pencil or ball-point pen.
- Do not open the shutter.
- Do not use the floppy disk in a dusty place.
- Do not place anything on the floppy disk.
- Do not leave the floppy disk in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- Keep the floppy disk away from cigarette smoke.
- Keep the floppy disk away from any liquid (e.g., water) and chemicals.
- Keep the floppy disk away from any magnetic objects (e.g., magnet).
- Do not pinch the floppy disk with a paper clip or drop it.
- Keep the floppy disk in a floppy disk case that protects it from magnetism and dust.
- A floppy disk has a write-protect switch that prevents the stored data from accidental erasure. You can read data from a write-protected floppy disk, but you cannot save data into the floppy disk or format it. NEC recommends that you should write-protect any floppy disk containing valuable data unless you are about to save data. To write-protect a 3.5-inch floppy disk, use the write-protect switch provided on its back.



- The floppy disk is a very delicate storage media. Dust or thermal changes, as well as operator's misconduct or sever failures, may cause loss of data. To avoid loss of data, NEC recommends that you should make a back-up copy of your valuable data on a regular basis. (Make sure to make a back-up copy of every floppy disk provided with the server.)

CD-ROM Drive

Your server is provided with the CD-ROM drive on its front to read data from a CD-ROM (read-only compact disk). The CD-ROM provides larger and faster data read than the floppy disk.

⚠ CAUTION

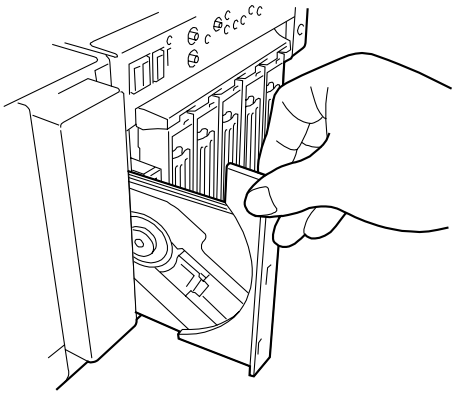
Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not leave the tray ejected from the CD-ROM drive.

Set a CD-ROM on the CD-ROM drive in the following procedure.

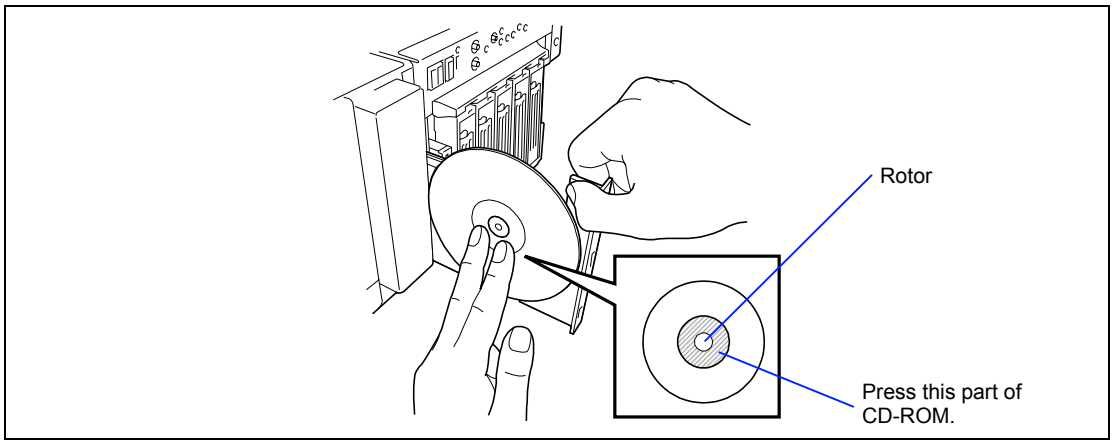
1. Confirm that the power of the server is on (with the POWER/SLEEP lamp being lit in green) before setting the CD-ROM on the CD-ROM drive.
2. Press the Eject button on the front of the CD-ROM drive.

 The tray comes out a little.
3. Hold the tray lightly and pull it out toward you until the tray stops.



4. Put the CD-ROM on the tray carefully and securely with the date recorded surface facing toward the tray.

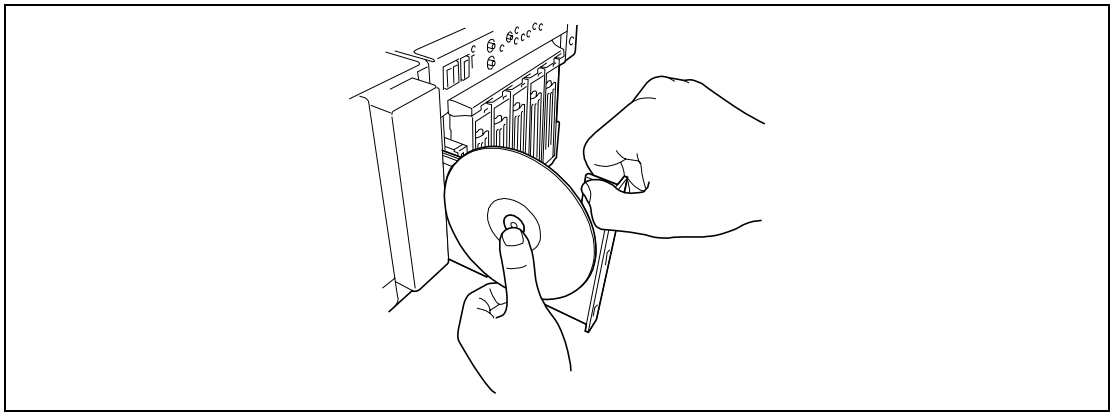
5. As shown in the figure below, hold the tray with a hand and press the CD-ROM with fingers of another hand to make the hole of the CD-ROM fit to the rotor at the center of the tray.



6. Push the front of the tray lightly to retract it into the drive.

IMPORTANT: If a noisy sound in driving the CD-ROM drive occurs after setting a CD-ROM, set it again correctly.

To take out the CD-ROM from the CD-ROM drive, press the Eject button in the similar way in setting the CD-ROM to make the tray go out.



If the access lamp is lit in orange, the CD is being accessed. Confirm that the access lamp is not lit before pressing the Eject button.

As shown in the figure below, hold the tray with a hand and take the end of the CD-ROM lightly by the fingers of another hand with the suppression of the rotor at the center of the tray to remove the CD-ROM from the tray.

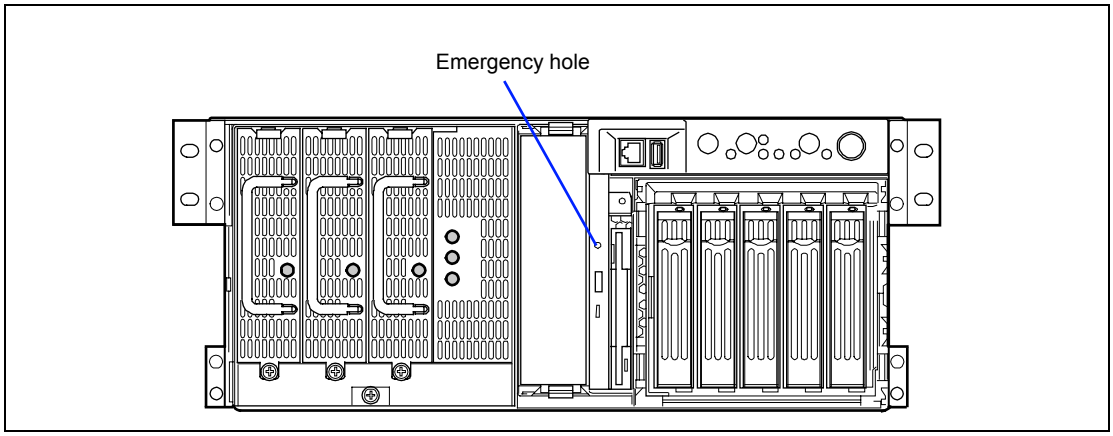
After taking out the CD-ROM, return the tray into the drive.

When you fail to eject the CD-ROM tray with the Eject button and take out the CD-ROM from the server, follow the procedure below.

1. Press the POWER switch to power off the server. (The POWER/SLEEP lamp goes off.)
2. Insert a metal pin of approximately 1.2 mm in diameter and 100 mm in length (a straightened large paper clip will make a substitute) into the emergency hole on the upper front of the CD-ROM drive and gently push it in until the tray is ejected.

IMPORTANT:

- Do not use a toothpick or plastic stick that is easy to break.
- If the above procedure does not let you take out the CD-ROM, contact your service representative.



3. Hold the tray and pull it out.
4. Take out the CD-ROM.
5. Push the tray back into position.

NOTE: Use of the CD-ROM

Keep the following notes in mind to use the CD-ROM for the server:

- For the disk which does not conform to the CD standard, the playback of such a disk with the CD drive is not guaranteed.
- Do not drop the CD-ROM.
- Do not place anything on the CD-ROM or bend the CD-ROM.
- Do not attach any label onto the CD-ROM.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the CD-ROM with its printed side upward and gently put it on the tray.
- Do not scratch the CD-ROM or write anything directly on it with a pencil or ball-point pen.
- Keep the CD-ROM away from cigarette smoke.
- Do not leave the CD-ROM in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the CD-ROM, wipe the CD-ROM from its center to edge with a dry soft cloth slowly and gently.
- Use the CD cleaner to clean the CD-ROM. Do not use record spray/cleaner, benzene, or thinner.
- Keep the CD-ROM in a CD-ROM case when not in use.
- If the CD-ROM emits large noise in the CD-ROM drive, remove the CD-ROM and insert it back again.

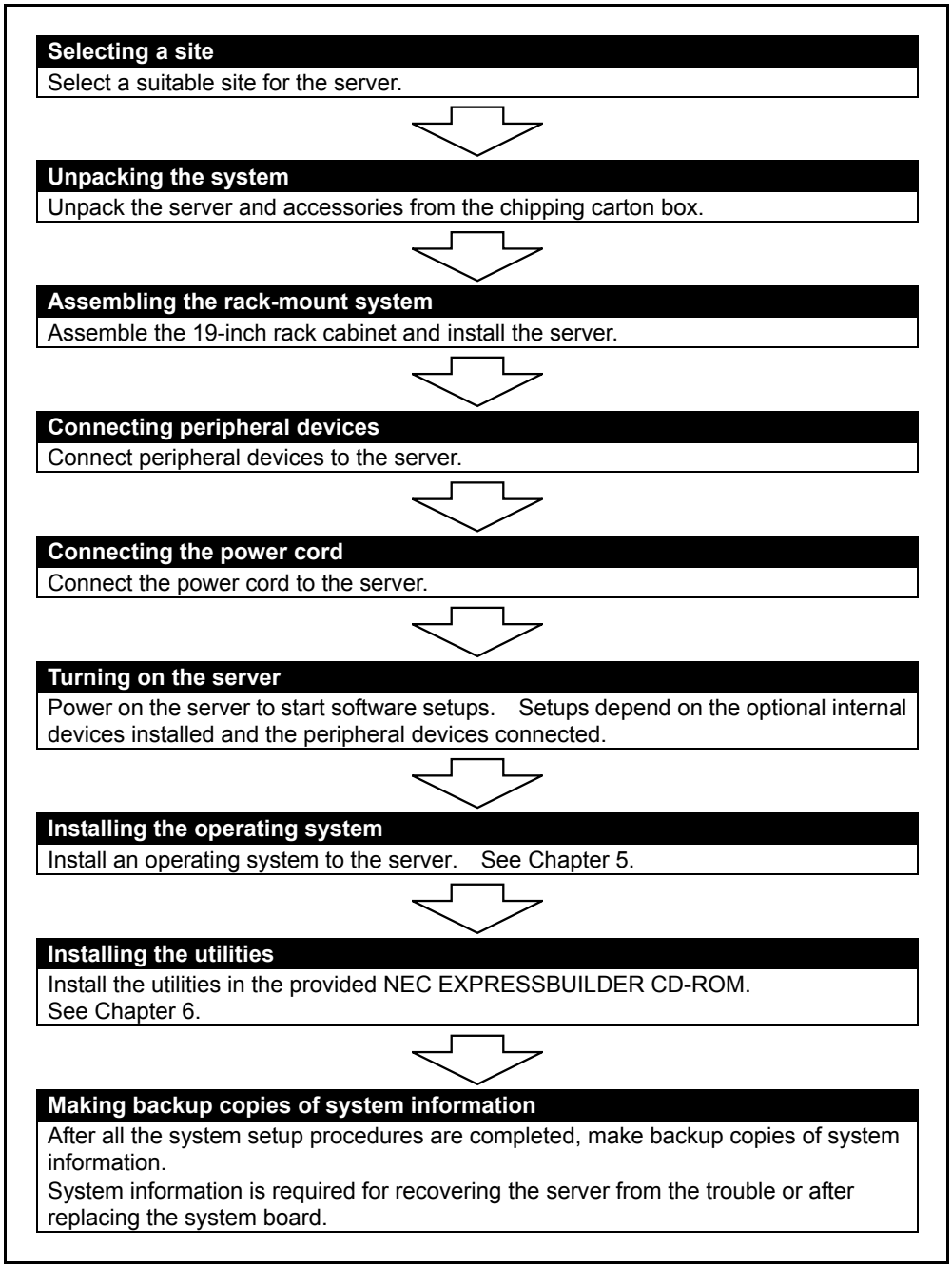
Chapter 3

Setting Up Your Server

This chapter describes how to set up your server appropriate for your system, on a step-by-step basis.

SETUP FLOW

Follow the flowchart below to set up the server.



SELECTING A SITE

Installation

Your server unit should be mounted in a standard EIA 19-inch rack cabinet.

Installation of Rack

Refer to the documentation attached to the rack or contact your service representative for rack installation of the server unit.

⚠ WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not use the server in any unapproved place.

⚠ CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not carry or install the server only by a single person.
- Do not install the server where the load may be concentrated on a specific point.
- Do not install any component on the server only by a single person.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.
- Do not provide the wiring exceeding the rating power.

Before you begin the rack installation review the following guidelines.

Do Not:

- Locate a rack in a narrow space that would inhibit devices from being pulled out from the rack completely.
- Locate the rack on a floor that cannot bear the total weight of the rack and devices mounted in the rack.
- Locate the rack in a place where stabilizers cannot be installed or where the rack can be installed only after proper earthquake-resistant is constructed.
- Locate the rack on an uneven or slanting floor
- Locate the rack in an area that has drastic temperature change (near a heater, air conditioner, or refrigerator).
- Locate the rack where intense vibration may be generated.
- Locate the rack where corrosive gases (sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, ozone, etc) exist.
 And also, locate it in the environment where the air (or dust) includes components accelerating corrosion (ex. sulfur, sodium chloride) or conductive metals.
- Place the rack on a carpet not subject to the anti-static process.
- Locate the rack where some objects may fall on the rack.
- Locate the rack near a device that is generating intense magnetic fields (such as a TV, radio, broadcast/communication antenna, power transmission wire, and electromagnetic crane.) If unavoidable, contact your service representative to request proper shielding.)
- Locate the rack where the power cord of the server must be connected to an AC outlet that shares other devices with large power consumption.
- Locate the rack next to equipment that generates power noise (e.g., contact spark at power-on/power-off of commercial power supply through a relay). If you must install the server close to such equipment, request your service representative for separate power cabling or noise filter installation.
- Locate the rack where following conditions can not be satisfied.

 Conditions for operation: *
 Temperature: 10 to 35°C
 Humidity: 20 to 80% (no condensation)

 * It is recommended that the server should be used in a room where temperature is in the range between 15 to 25°C.

UNPACKING THE SYSTEM

When you receive your system, inspect the shipping containers prior to unpacking. If the shipping boxes are damaged, note the damage, and if possible, photograph it for reference. After removing the contents of the containers, keep the cartons and the packing materials. If the contents appear damaged when you unpack the boxes, file a damage claim with the carrier immediately.

ASSEMBLING THE RACK-MOUNT SYSTEM

This subsection provides the instructions for the rack-mount server unit into a standard EIA 19-inch rack cabinet.

This subsection also describes the removal procedures for the rack mount server unit from the 19-inch rack cabinet.

⚠ WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not use any rack which does not conform to the relevant standard.
- Disconnect the power cord(s) before installing or removing the server.

⚠ CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not leave more than one device being pulled out from the rack.
- Do not lift the server only by a single person.
- Always install the server in the specified place.
- Do not install the server on the rack leaving the cover removed.
- Do not pinch your finger with mechanical components.

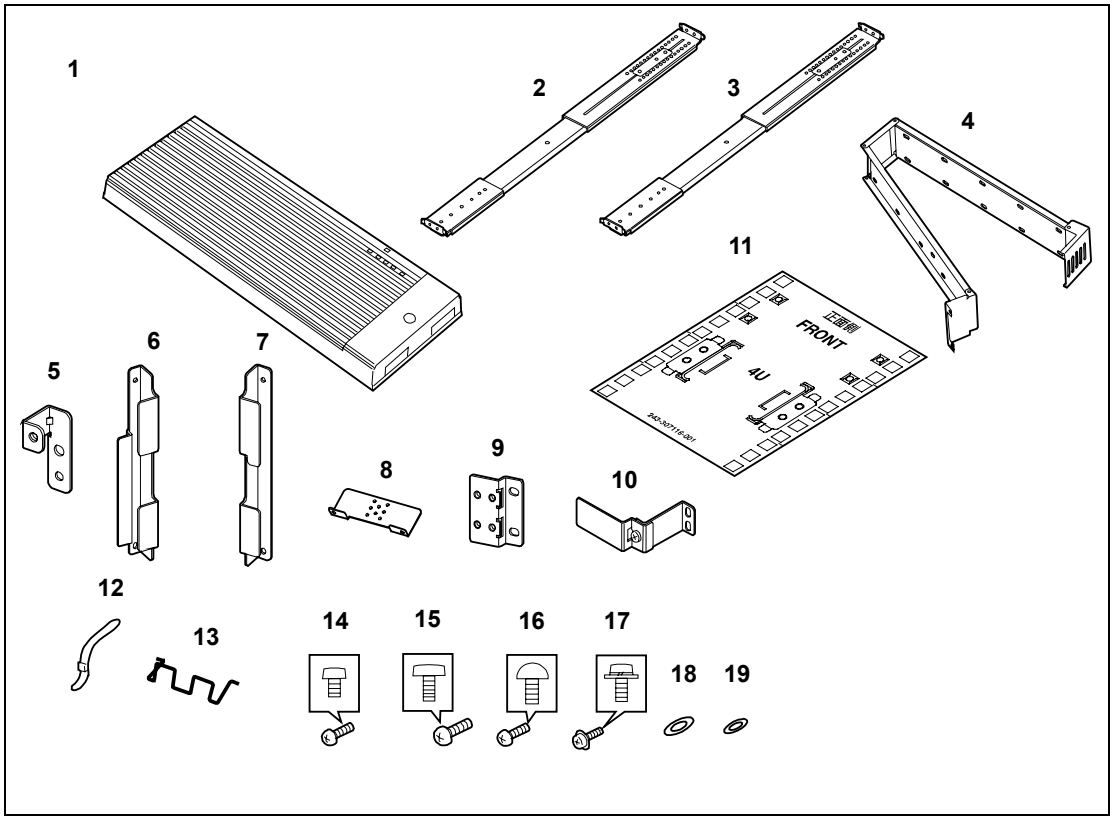
ESD Precaution

An electrostatic discharge (ESD) can damage disk drives, option boards, and other components. You can provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground when handling system components.

Electronic devices can be easily damaged by static electricity. To prevent damage, keep them in their protective packaging when they are not installed in your system.

Checking Components

Confirm that the following tools or components are provided to install the server on the rack.



No.	Item	Q'ty	Remarks
1	Front bezel	1	
2	Slide rail assembly (L)	1	"L" is stamped on the rail.
3	Slide rail assembly (R)	1	"R" is stamped on the rail.
4	Cable arm	1	
5	Adapter bracket	1	
6	Handle (L)	1	
7	Handle (R)	1	
8	Arm bracket (700)	1	Use one according to the distance between the front and rear vertical mounting rails of your rack cabinet.
9	Arm bracket (900)	1	
10	Arm stopper	1	
11	Template	1	
12	Tie-wrap	6	25 cm long.
13	Lock spring	1	Used to fix the power cords.
14	Screw-A	6	CPIMSx#8-32x6
15	Screw-B	7	CPIMSx6-32x8
16	Screw-C	14	CBIMS×5×10×3GF
17	Screw-D	6	PL-CPIMSx4x8x15BF
18	Washer-A	12	M5-14 (Assembled with Screw-C.)
19	Washer-B	4	PIWAx5x15BF (Assembled with Screw-D.)

Required Tools

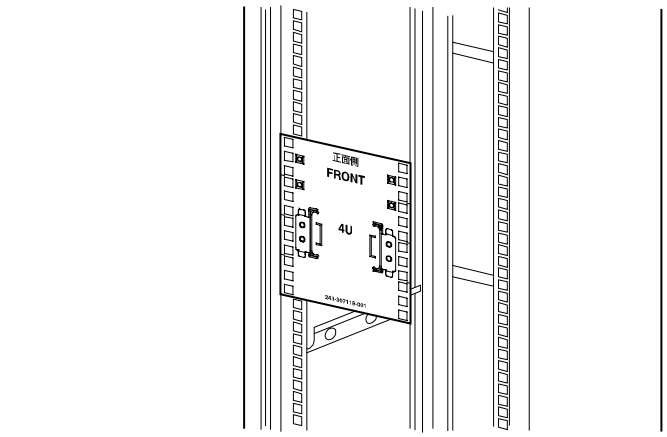
#2 Phillips screwdriver and flat tip screwdriver are recommended for assembling the rack-mount system.

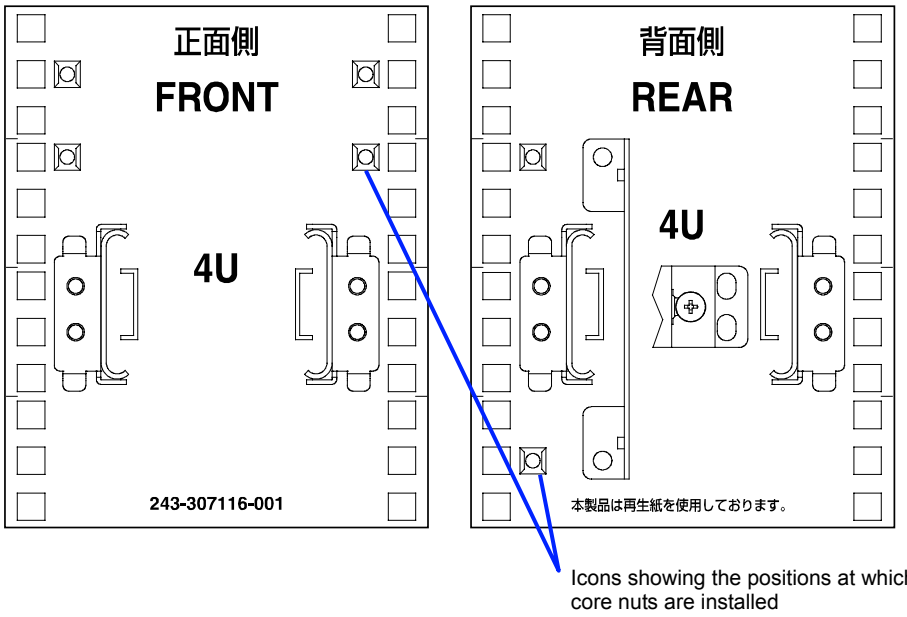
Installation Procedure

Install the server on the rack in the following procedure.

1. Define the position (height) at which the server is installed by using templates.

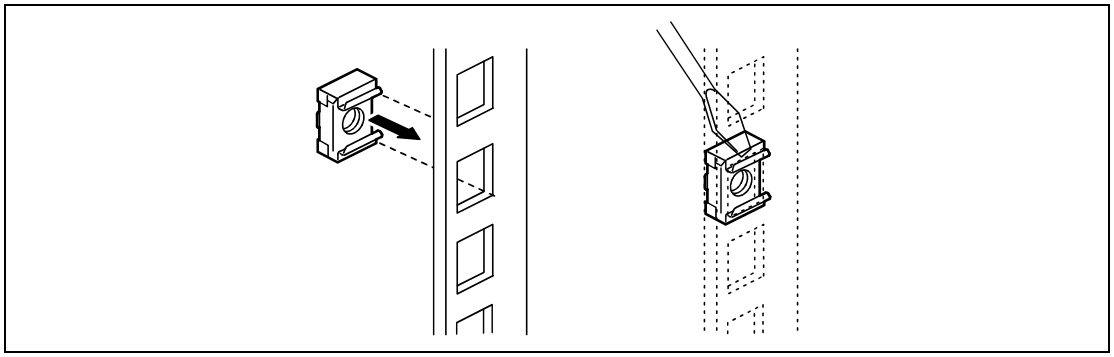
 The templates have the same vertical size as the server. Put the templates on the front and rear of the rack to locate them. The installation positions of the core nuts and slide rail assembly are specified on the templates.





Template (front) Template (rear)

2. Install the core nuts coming with the rack at the positions defined by the templates.



Install four core nuts (two for each of left and right sides) on the front face of the rack from the inner side. The server is fixed to the rack with the core nuts, four screws C, and four washers A.

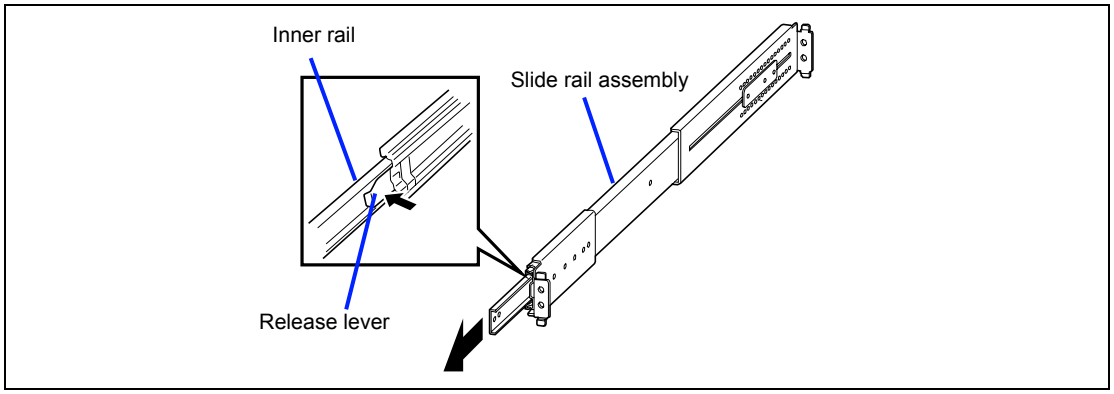
Install two core nuts from the inner side of the rear of the rack (at the left side when you faces the rear of the rack). When the core nuts are installed on a rack with the distance between the front and rear mount faces of 700 or 743 mm, fix the arm bracket (700) to the core nuts.

Hang the lower clip of a core nut on the proper rectangular hole and insert the upper clip into the hole using a flat-tip driver or a similar tool.

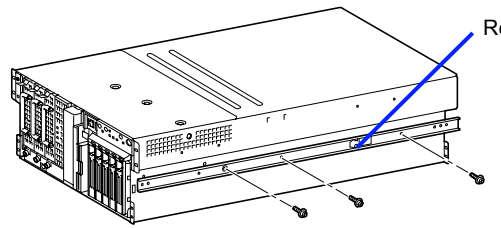
> **IMPORTANT:** Install the core nuts so that the clips are located at the top and bottom. If any core nut is installed with the clips located at the left and right ends, the server may be dropped to cause it to be defected and also people to be injured severely.

3. Pull out either one of the inner rails from the slide rail assembly.

If the inner rails are pull out, these are locked once at a position of the way. Push the release lever to release the lock and pull out the inner rails further.



4. Install an inner rail on one side of the server with three screws A in the direction shown in the figure.

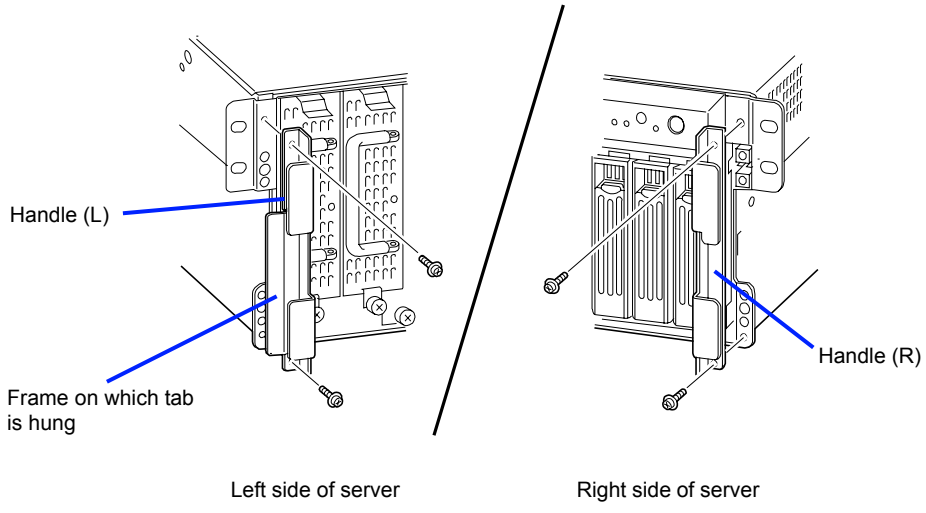


NOTE: Each inner rail may be used at either of the left and right sides. However, use the proper inner rail to each slide rail assembly from which the rail has been removed so that the direction of the inner rail can be fit to the slide rail assembly.

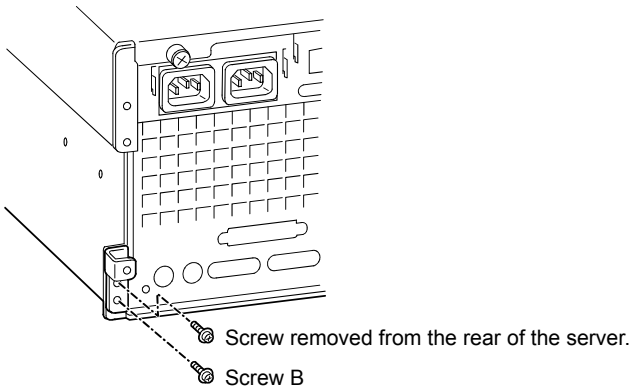
5. Install the other inner rail on the other side of the server by steps 3 and 4 above.

6. Install handles R and L on the front of the server with four screws B.

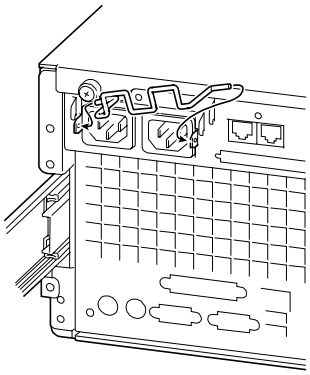
NOTE: The left handle is different from the right handle in shape. Check the shape of each handle. The handle (L) has the frame on which the tab of the front bezel is hung.



7. After removing the screw located on the rear of the server, install the adapter bracket on the rear of the server with a single screw B and a screw removed before.

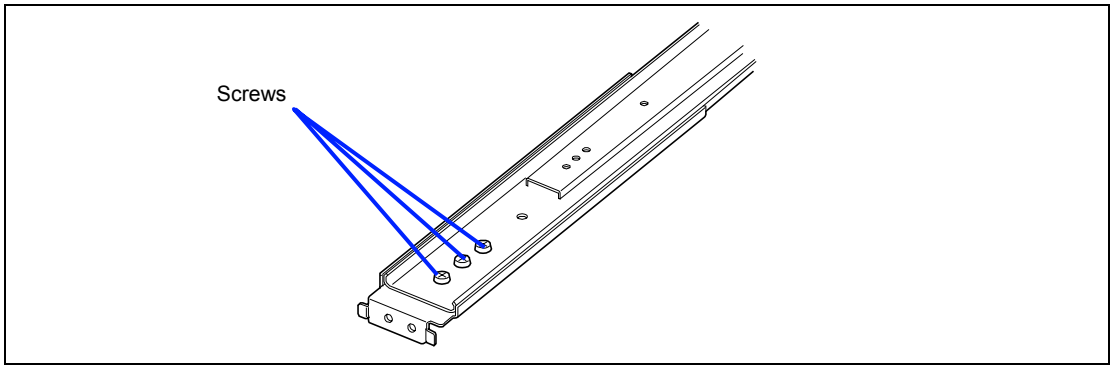


8. Install the lock spring to the holes at the both sides of the AC inlet.

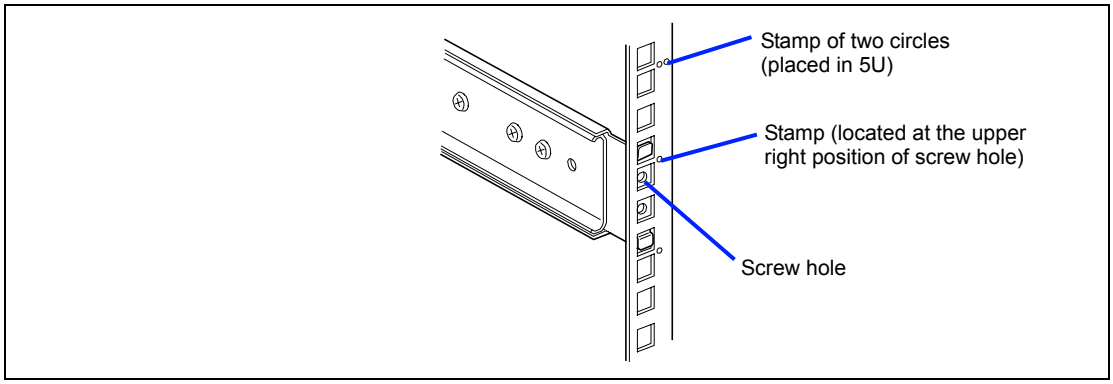


9. Loosen the three screws with which the slide bracket of the slide rail assemble is fixed.

This step is required to match the length of the slide rail assembly with the depth of the rack (distance between the front and rear supports). If the three screws are loosened, the slide bracket may be slid in the front or rear direction.



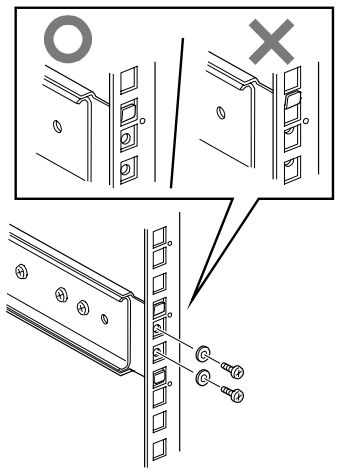
10. Locate the slide rail assembly on the right side of the rack frame at the position defined by the template.



NOTES:

- Check the direction of installing the slide rail assembly.
 - Make the bracket face facing the outside of the rack.
 - Locate the side with the slide bracket at the rear of the rack.
- The front and rear supports of the rack have rectangular holes for screw fastening. For the NEC rack, round stamps are provided in 1U. As shown in the figure, locate the slide rail assembly so that a stamp is positioned at the upper right of the top screw hole of the slide rail assembly.

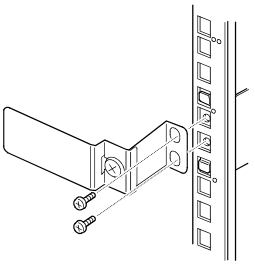
11. Fix the slide rail assembly with four screws C (two on each of the front and rear sides) and four washers A (two on each of the front and rear sides).



NOTES:

- Make sure that the frame tips on the slide rail assembly are contact to the rectangular hole frames of the rack properly and the four screw holes of the rail can be seen through the mating rectangular holes of the rack
- Check that the slide rail assembly is located to the level.

12. Fasten the screws loosen in step 9 to fix the slide bracket.



13. Install the other slide rail assembly on the left side of the rack in the same procedure as that described by steps 9 to 12 above.

NOTE: Make sure that the slide rail assembly is installed at the same level as the other slide rail assembly already installed. For installing the server to the rack that has distance between the mount faces at the front and rear faces of the rack being 743 mm or longer, fix the slide rail assembly and arm stopper together with two screws C. (In this case, washers A is not necessary.)

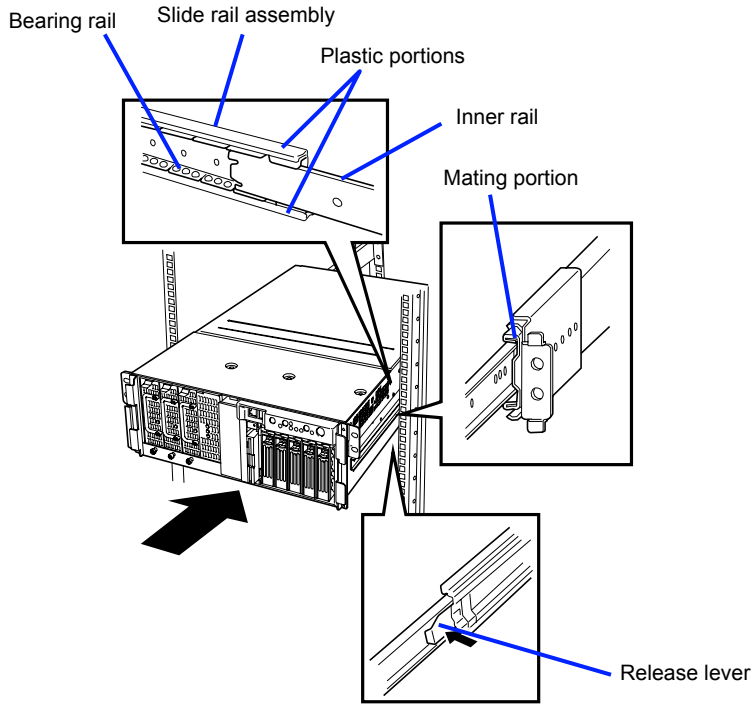
14. Hold the server by more than one person to mount it on the rack.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not lift the server only by a single person.
- Do not pinch your fingers with mechanical component.
- Do not push the release lever with fingers.

Insert the rails on the side faces of the server into the slide rail assemblies securely and then push the server slowly and carefully. If the server is locked on the way, push the server slowly with the depression of the release lever on each of the left and right sides.

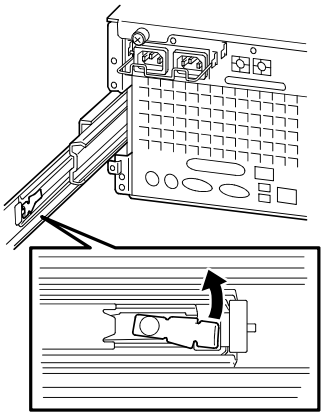


IMPORTANT: Push each release lever using a driver or a similar tool. Pushing a release lever with your fingers may cause the fingers to be caught and thus injured.

NOTE: The slide rail assembly installed in the rack contains a slide rail called the bearing rail. The bearing rail can be moved freely in the slide rail assembly. To install the server in the rack securely, slide the bearing rail to the front of the rack to put the plastic components at the tip of the rail and the inner rail into the server.

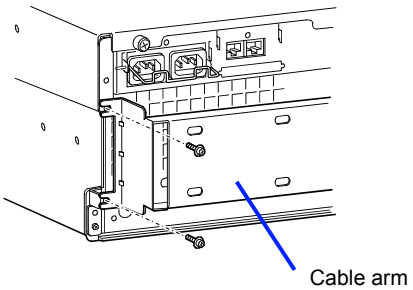
At the first installation, you may feel strong friction in pushing because the mechanical components cannot be completely engaged with each other. Push the server intensely.

NOTE: While the server is pushed into the rack, the server may be locked and thus cannot be pushed any more. This is because the lock lever on the rail prohibits the server from being pushed into the rack any more. Set the lock lever to be on the level to release the lock and then push the server into the rack slowly.

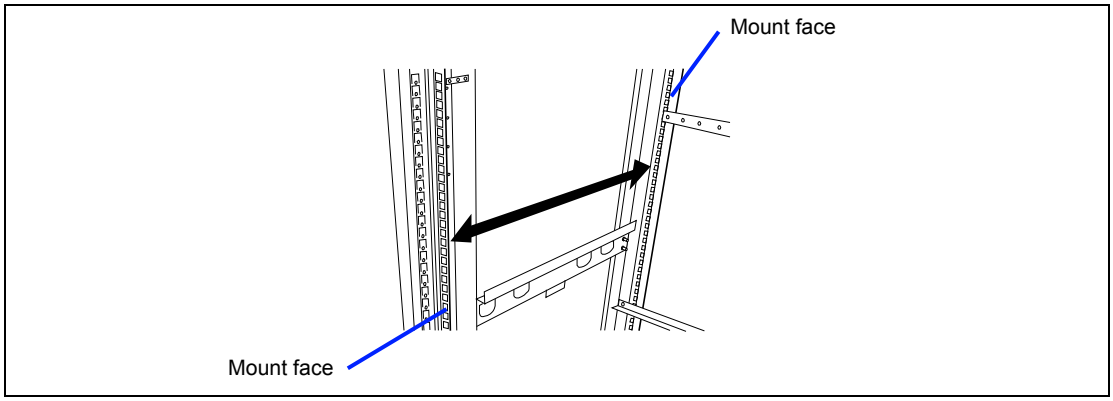


15. Install the cable arm on the rear of the server with two screws B.

Drive two screws B to the rear of the server and the adapter bracket temporarily, insert the groove of the cable arm to the screws, and securely fasten the screws driven temporarily



16. Install the arm bracket on the mount face at the rear of the rack or the slide rail assembly.

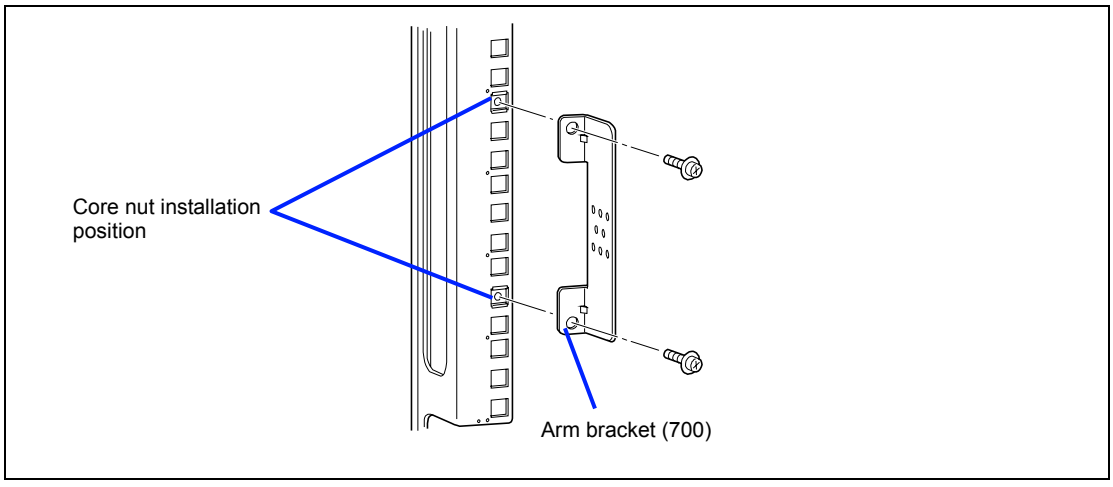


NOTE: Two types of arm brackets are provided to be fit to any distance between the front and rear mount faces of the rack.

Use arm bracket (700) if the distance between the front and rear mount faces of the rack is 700 or 743 mm. Use arm bracket (900) for the rack having the depth of 760 or 900 mm.

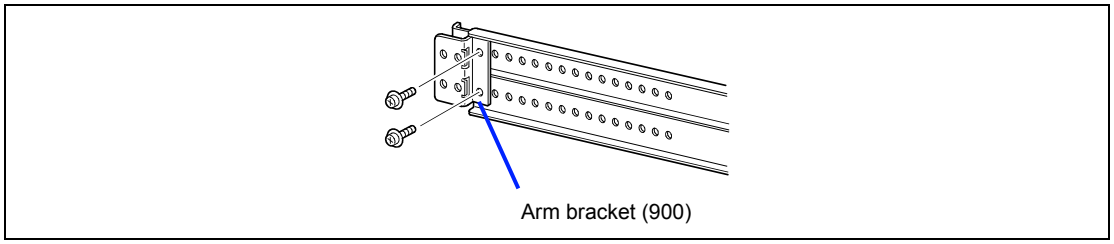
- For the distance between the mount faces at the front and rear of the rack being 700 or 743 mm:

 Fix the arm bracket (700) to the core nuts installed on the mount face of the rear of the rack with two screws C.



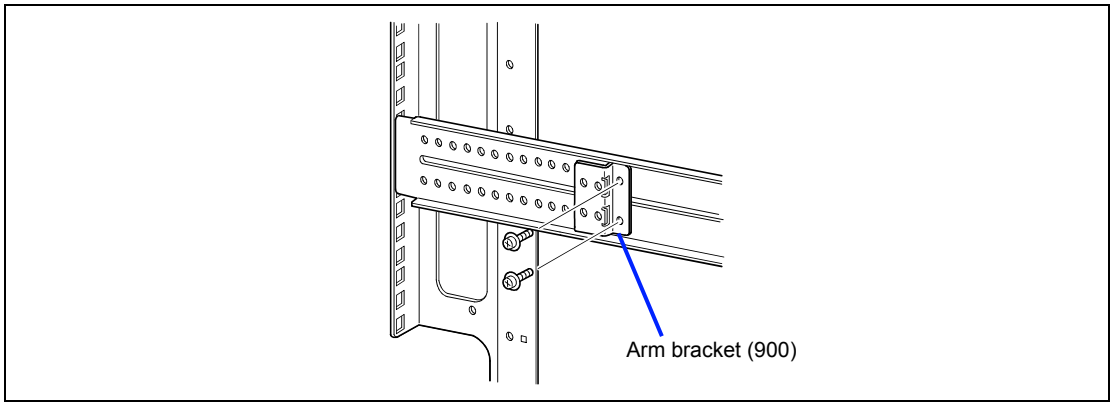
- For the distance between the mount faces at the front and rear faces of the rack being 760 mm:

 Fix arm bracket (900) to the screw holes nearest to the rear face among the rear holes on the slide rail assembly using two screws D.



- For the distance between the mount faces at the front and rear faces of the rack being 900 mm:

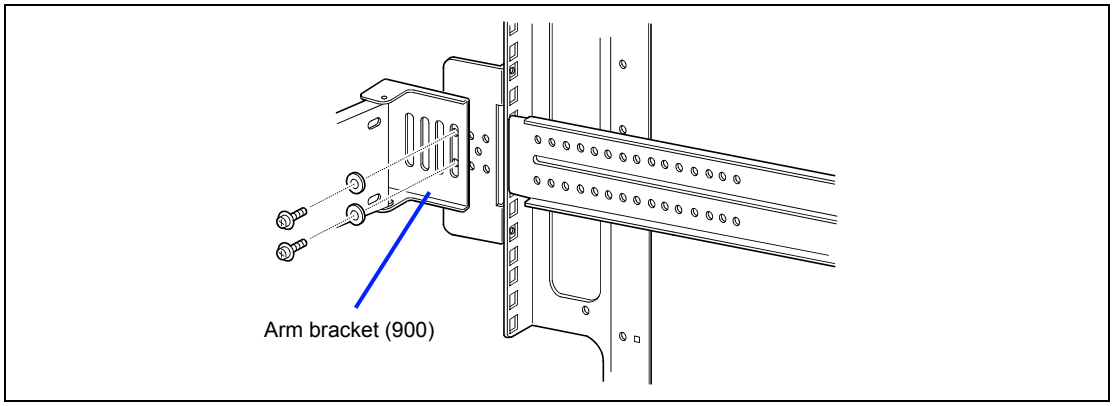
 Fix arm bracket 900 to the screw holes nearest to the front face among the rear holes on the slide rail assembly using two screws D.



17. Install the other end of the cable arm on the arm bracket installed in step 16.

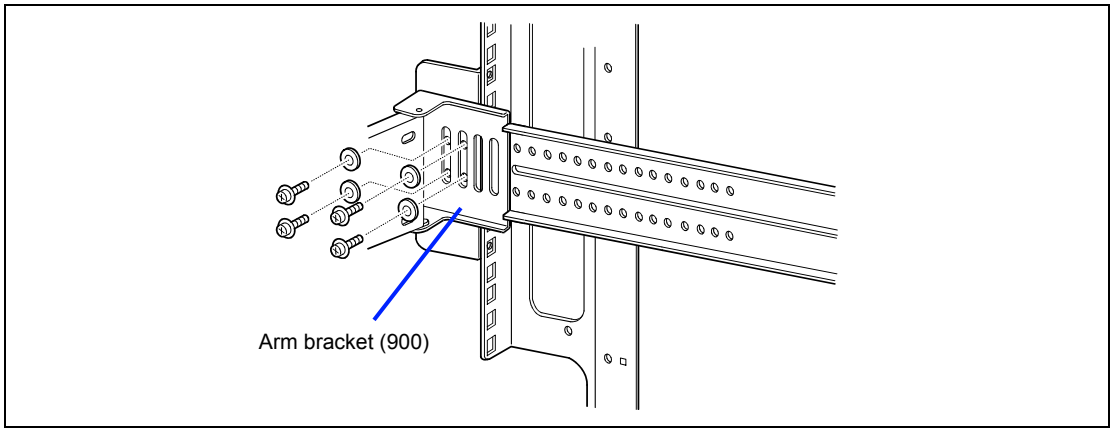
- For the distance between the mount faces at the front and rear of the rack being 700 mm:

 Fix the arm bracket with two screws D and two washers B at the position shown in the figure below.



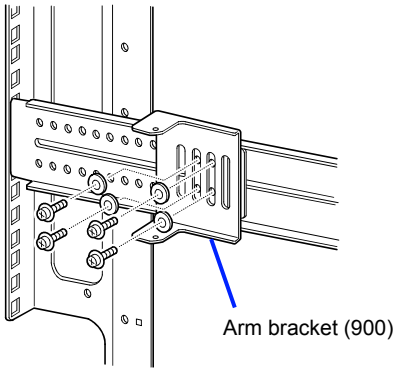
- For the distance between the mount faces at the front and rear of the rack being 743 mm:

 Fix the arm bracket with four screws D and four washers B at the position shown in the figure below.



- For the distance between the mount faces at the front and rear of the rack being 760 or 900 mm:

 Fix the arm bracket with four screws D and four washers B at the position shown in the figure below (the figure below shows the example with the distance between the mount faces at the front and rear of the rack being 900 mm).

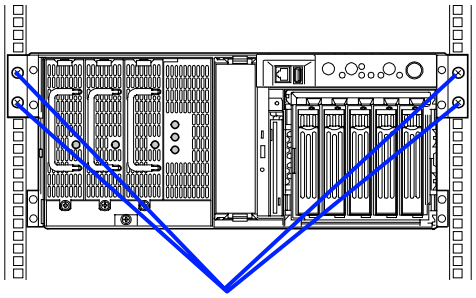


18. Push the server into the rack once to check the installation position.

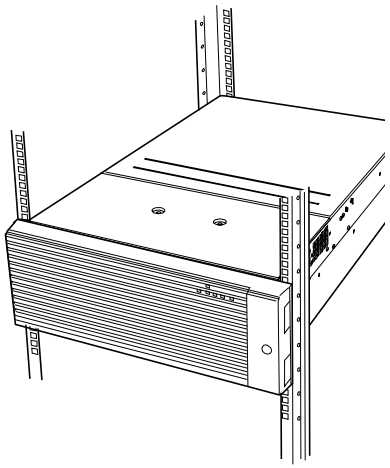
> **NOTE:** Make sure that the four screw holes at the upper left and right sides on the front of the server are fit to the core nuts installed in step 2. If the four positions are not fit at all, the slide rail assembly or the core nuts may be installed incorrectly. If so, the adjacent units cannot be installed without clearance. Confirm the installation positions and make the reinstallation from the first step.

19. Pull out or push the server into the rack for several times to confirm that the slides move smoothly.

20. Fix the server to the rack with four screws C and four washers A.



21. Install the front bezel.



Now the installation is completed.

Removal Procedure

More than one person should remove the server from the rack.

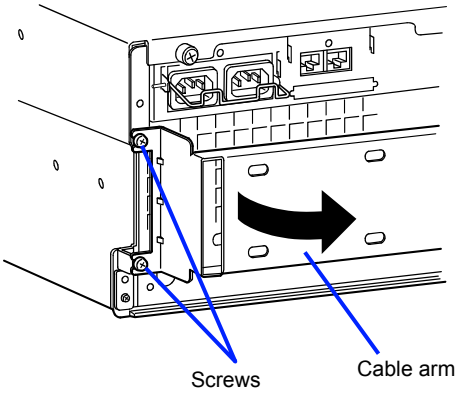
⚠ CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

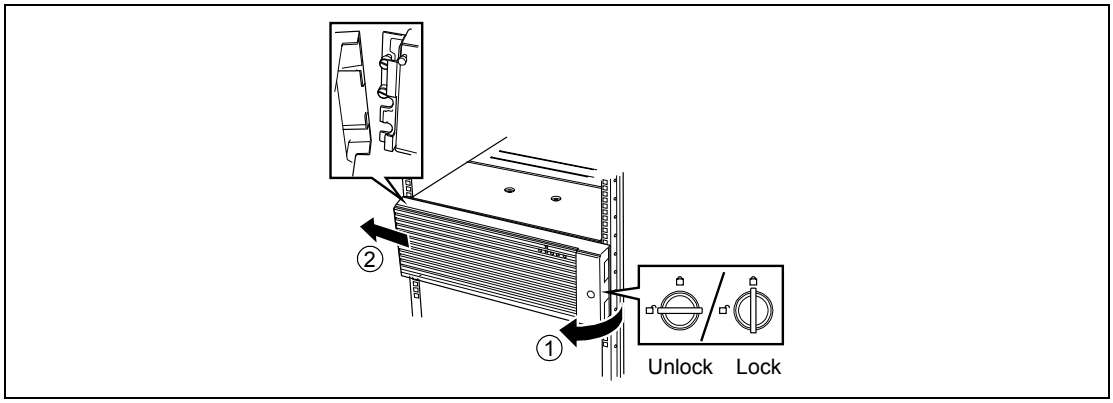
- Do not lift the server only by a single person.
- Do not pinch your finger with mechanical components.
- Note high temperature.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.

1. After confirming that the server is off-powered, remove the power cords and all interface cables connected to the server.
2. Loosen two screws with which the cable arm is fixed to the rear of the server to remove the cable arm from the server.



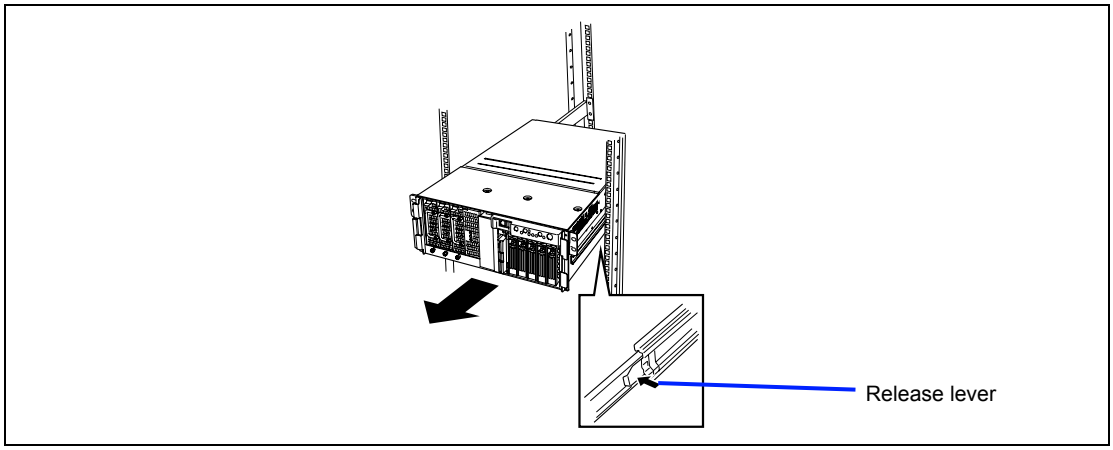
3. Release the security lock to remove the front bezel.

4. Remove four screws C located at both side of the front face of the server to fix it.



5. Hold the handle to pull out the server from the rack slowly and carefully.
The server clicks to be latched.

6. Push the left and right release levers to release the latch and then pull out the server from the rack slowly.



IMPORTANT:

- Push each release lever using a driver or a similar tool. Pushing a release lever with your fingers may cause the fingers to be caught and thus injured.
- Pull out the server slowly with the bottom supported by more than one person.
- Secure the power cord(s) and interface cables with a lock spring.
- Form the power cord with a slight slack at the AC inlet of the server. This is to prevent the power cord from coming off when the server is pulled out from the rack.
- Do not apply any pressure to the plug of the power cord.

See the "Installation procedure" when the mechanical components of the rack are removed also.

CONNECTING PERIPHERAL DEVICES

Connect peripheral devices to the server. The server is provided with connectors for wide variety of peripheral devices on its front and rear. The figure on the next page illustrates available peripheral devices for the server in the standard configuration and locations of the connectors for the devices.

⚠ CAUTION

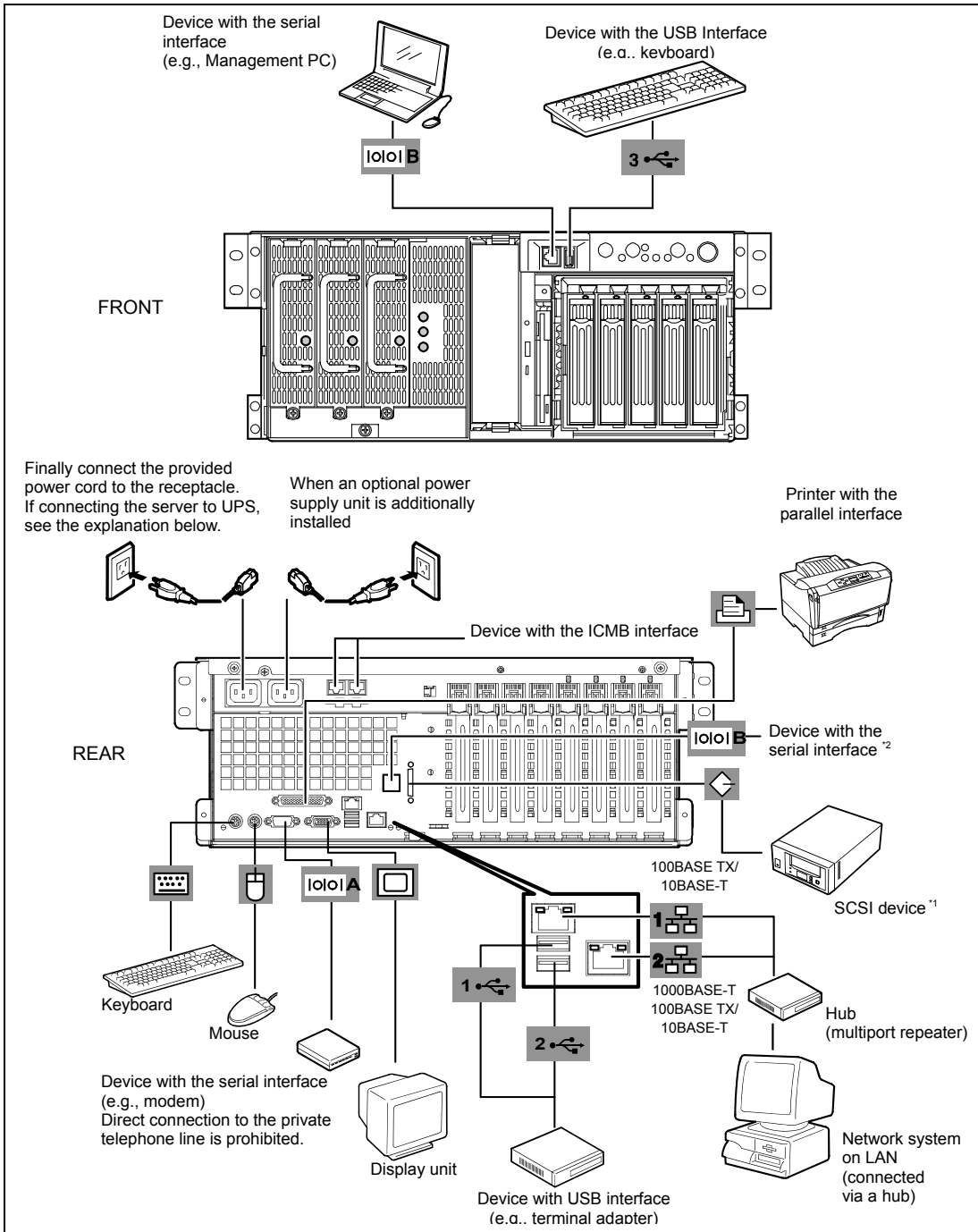


Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not connect any interface cable with the power cord of the NEC Express Server plugged to a power source.
- Do not use any unauthorized interface cable.

IMPORTANT:

- Power off the server and a peripheral device before connection. Connecting a powered peripheral device to the powered server will cause malfunctions and failures (excluding the USB device).
- To connect a third-party peripheral device or interface cable to the server, consult with your service representative for availability of such a device or cable. Some third-party devices may not be used for the server.
- The "100BASE-TX/10BASE-T connector" and the "serial port B connector" of this server have the same shape. Be careful not to connect a cable to a wrong connector.
- A leased line cannot be connected directly to the serial port connectors.
- Secure the power cord(s) and interface cables with a lock spring.
- Form the cables in such a way that they will not come into contact with the door or the guide rails on the sides of the server.



*1 To connect the external SCSI devices, change the baseboard cable connection.
*2 A leased line cannot be connected directly to this connector. The console of a management PC can be connected to only serial port B. (BIOS setting required) Connect the console to only serial port B on either the front or rear panel. To connect the rear side serial port B, change the baseboard cable connection with rear side serial cable that comes with the server.

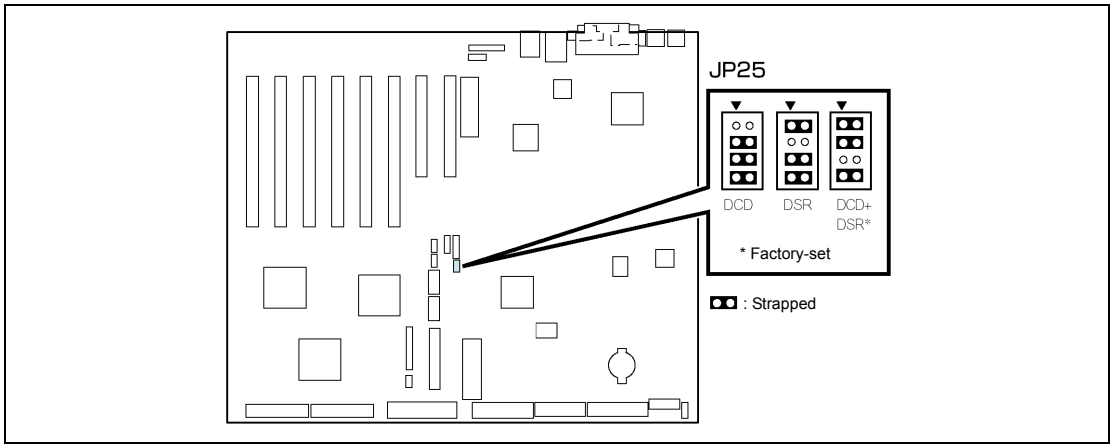
Connection to Serial Ports

Various types of serial devices can be connected to the RJ-45 serial ports on the front or rear panels of the server. Some devices require the setting of the jumper pin (JP25) on the baseboard to be changed according to the DCD/DSR signal specification, or they need to be connected via an optional serial port conversion cable.

There are two kind of cables in optional serial portconversion cable set. The "R" label is attached to one cable (used with this server), and the "F" label is attached to the other (not used with this server). Regarding to this cable set, contact your service representative for details.

IMPORTANT: Inter-equipment potential difference may cause a server failure. Be sure to turn off the server and the connection-destination equipment and disconnect the power cord before connecting/disconnecting the cable to/from the serial port.

The figure below shows the location of the jumper pin (JP25). For methods to dismount the cover and other internal components, see Chapter 9.

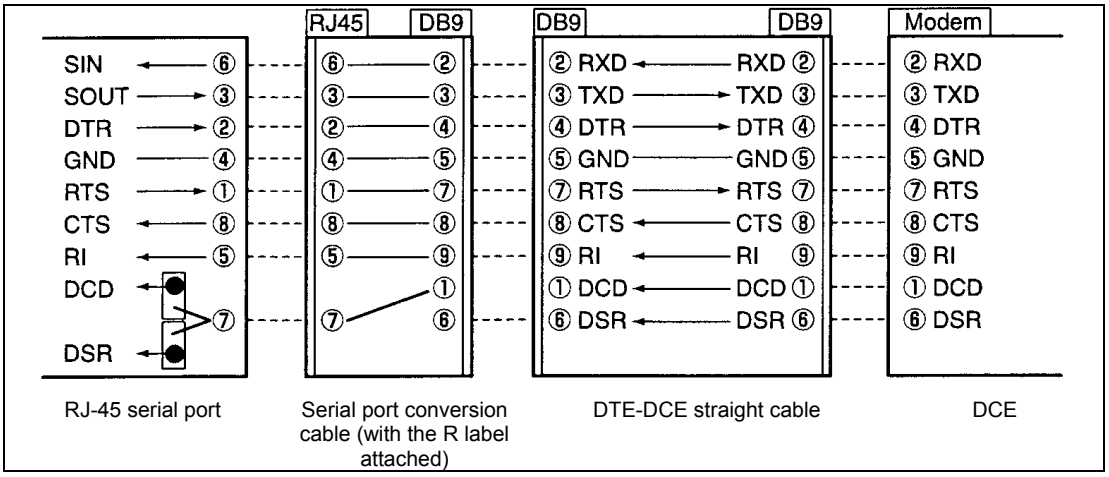


Connection between the RJ-45 Serial Port and a Modem

To connect a modem to the RJ-45 serial port, use the optional "serial port conversion cable" with the "R" label attached. Be careful not to use the other one with the "F" label attached. Set the jumper pin to "DCD+DSR" (factory-set).

IMPORTANT: Make sure of the icon of the server, and be sure to connect the cable to serial port B. Be careful not to connect to a LAN port by mistake.
To prevent wrong connection, write "LAN port" on a tag and put the tag to the connector of the LAN cable that is to be connected to this server.

Wiring block diagram of the internal cables:

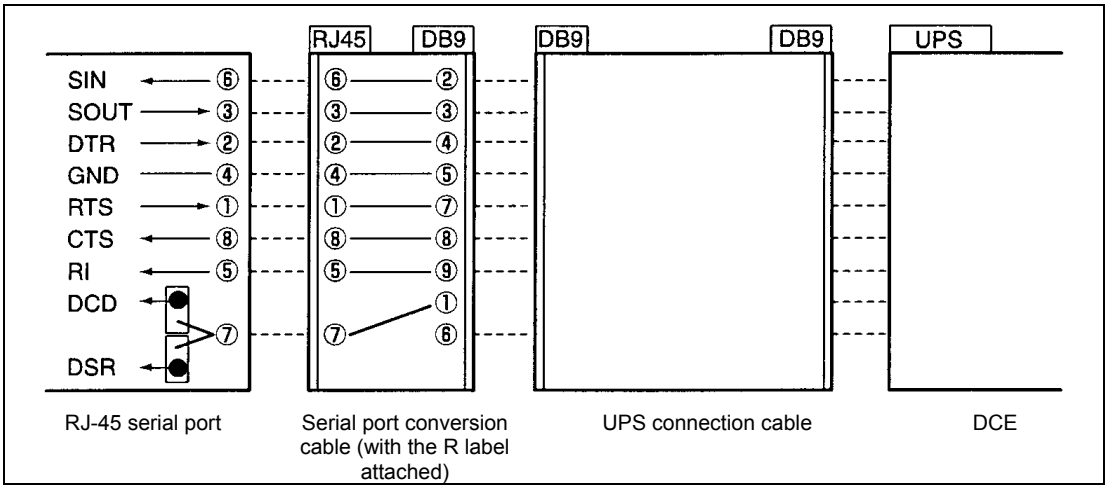


Connection between the RJ-45 Serial Port and a UPS

To connect a UPS to the RJ-45 serial port, use the optional "serial port conversion cable" with the "R" label attached. Be careful not to use the other one with the "F" label attached. Set the jumper pin to "DCD+DSR" (factory-set).

IMPORTANT: Make sure of the icon of the server, and be sure to connect the cable to serial port B. Be careful not to connect to a LAN port by mistake.
To prevent wrong connection, write "LAN port" on a tag and put the tag to the connector of the LAN cable that is to be connected to this server.

Wiring block diagram of the internal cables:

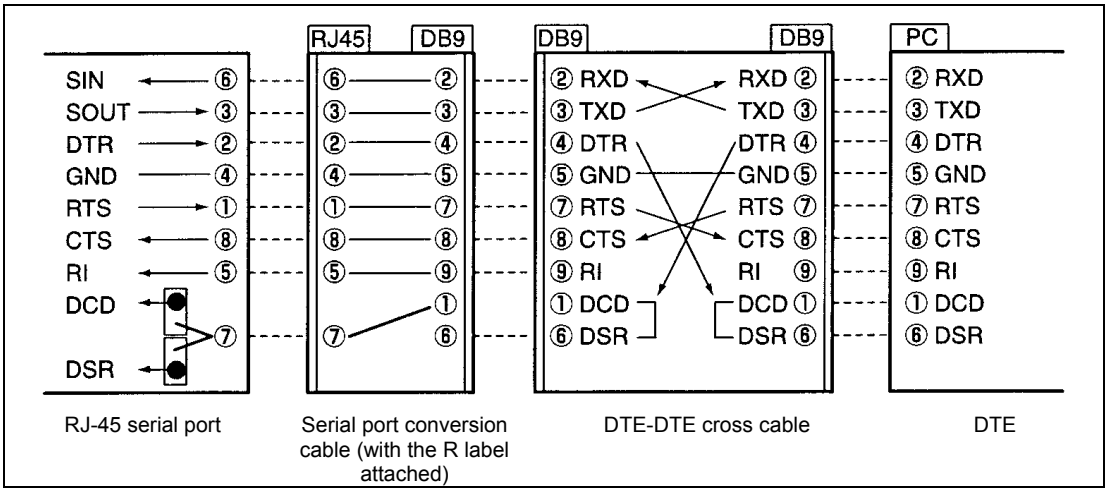


Connection between the RJ-45 Serial Port and a Management PC (DB9), etc.

To connect equipment such as a management PC having a DB9-type serial connector to the RJ-45 serial port, use the optional "serial port conversion cable" with the "R" label attached. Be careful not to use the other one with the "F" label attached. Set the jumper pin to "DCD+DSR" (factory-set).

IMPORTANT: Make sure of the icon of the server, and be sure to connect the cable to serial port B. Be careful not to connect to a LAN port by mistake.
To prevent wrong connection, write "LAN port" on a tag and put the tag to the connector of the LAN cable that is to be connected to this server.

Wiring block diagram of the internal cables:



Connection between the RJ-45 Serial Port and Device Needing a DCD/DSR Signal

If a "terminal concentrator" or the like is to be connected to the RJ-45 serial port, thoroughly read the instruction manuals of the connection-destination equipment and cable before starting the connection. Set the jumper pin of this server to "DCD" or "DSR" in accordance with the signal that the connection-destination equipment needs.

The jumper settings and serial port signals of this server are as shown below. When directly connecting the server and a terminal concentrator or the like through an RJ-45 cable, prepare the cable according to the figure below.

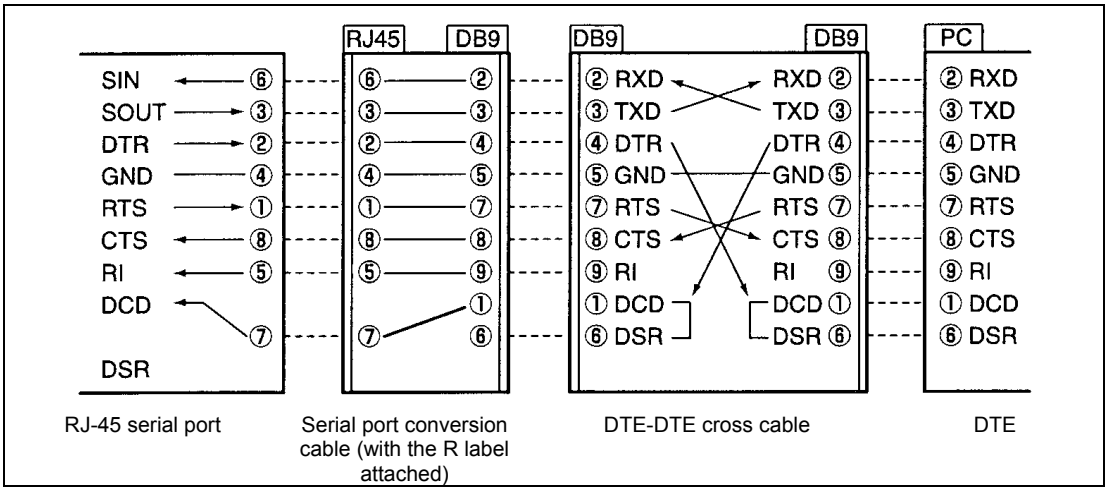
IMPORTANT:

- Make sure of the icon of the server, and be sure to connect the cable to serial port B. Be careful not to connect to a LAN port by mistake.
- To prevent wrong connection, write "LAN port" on a tag and put the tag to the connector of the LAN cable that is to be connected to this server.
- Be sure to observe the following items to prevent damage to this server and the peripheral device:
 - When using a shielded cable (STP cable), confirm that the connector of the connection-destination equipment is compatible with the STP cable. Connect the equipment to the server through an STP cable of up to 15 m.
 - When using an unshielded cable (UTP cable), confirm that the connection-destination equipment is mounted in the rack of the server or a rack linked with the server rack. Connect the equipment to the server through a UTP cable of up to 15 m.
 - To prevent wrong connection, write "Serial port" on a tag and put the tag to the connector of the serial cable that is to be connected to this server.

JP25



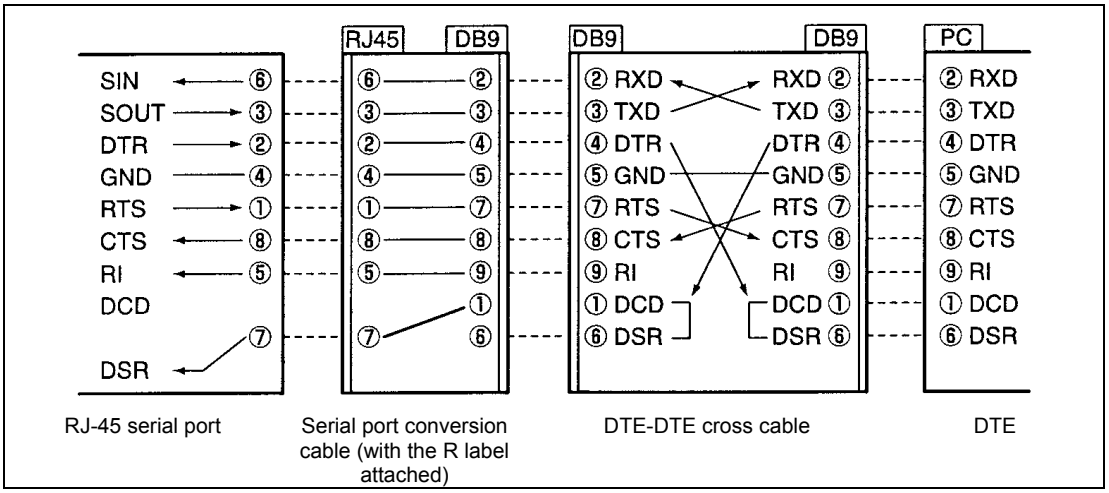
: Strapped



JP25



: Strapped



Connection to External SCSI Devices

Two Ultra 320 SCSI connectors are equipped with the baseboard in your server.

Ultra 320 SCSI (A) connector is used to connect the internal SCSI hard disk drives. Ultra 320 SCSI (B) connector is used to connect the internal 5.25-inch SCSI file device or external SCSI devices.

The internal SCSI cable for 5.25-inch SCSI file device is connected to Ultra 320 SCSI (B) connector at the factory.

To connect the external SCSI devices with your server, you must change the internal SCSI cable connection by using the attached external SCSI cable (see Chapter 9 for details).

If your system can connect with the external SCSI devices, observe the following notices. (For notes on connecting the optional add-in SCSI card, refer to the manual that comes with the optional card.)

- Choose the SCSI ID between 0 and 6 that hasn't been assigned to any other SCSI device connected to your server.
- Enable the SCSI termination or connect the SCSI terminator to the device that is at the end of SCSI chain.
- Only one SCSI device can be connected to your server. (A maximum of two devices when N8141-28AF device expansion unit is connected.)
- Use the "SCSISelect" utility to make the setting for the connected SCSI device.
- When an external SCSI devices is connected, the device can operate at the transfer rate shown in the table below depending on the internal line length of the connected device and the total length of SCSI cables.

Internal line length of external SCSI device and total length of SCSI cables	Maximum transfer rate [MB/sec]	[Sync Transfer Rate] in SCSI*Select*	Data transfer width
2 m or shorter*1	20	Auto*2	Narrow (8-bit)
	40	Auto*2	Wide (16-bit)
11 m or shorter (only for LVD)	320, 160, 80	Auto*2	Wide (16-bit)

*1 The total length of SCSI cables should be 1 m or shorter if the NB141-28AF device expansion unit is installed.

*2 The value is set to "Auto" at the shipment. For some SCSI devices, the transfer rate may be restricted. To install a SCSI device, read the manual coming with the device carefully.

CONNECTING POWER CORD

Connect the provided power cord to the server.

⚠ WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not hold the power plug with a wet hand.

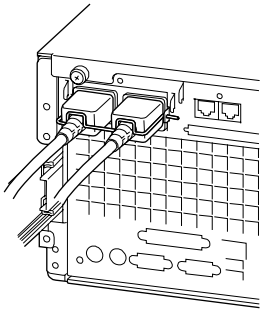
⚠ CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not plug the power cord in to an improper power source.
- Do not connect the power cord to an outlet that has an illegal number of connections.
- Insert the power plug into the outlet as far as it goes.
- Use the authorized power cord only.

1. Plug the provided power cord into the AC inlet on the rear of the server.
2. Plug the other end of the power cord into the wall outlet.
3. Secure the power cord with a lock spring.



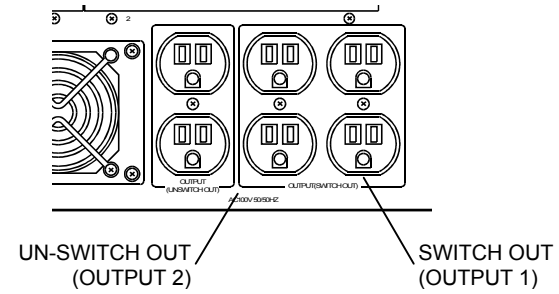
To connect the power cord from the server to an interruptive power supply (UPS), use service outlets on the rear of the UPS.

The UPS service outlets are categorized into two groups: SWITCH OUT and UN-SWITCH OUT. (They may be called "OUTPUT1" and "OUTPUT2".)

To control power supply with an application (NEC ESMPRO UPSController) that controls the UPS, connect the power cord to an SWITCH OUT outlet.

For constant power supply, connect the power cord to a UN-SWITCH OUT outlet. (Connect the modem that is in service for 24 hours to this outlet.)

<Example>



When the power cord from the server to a UPS, change the BIOS setup of the server to link with power supply from the UPS.

Change a parameter for "AC-LINK" under the Server menu of the BIOS setup utility. See Chapter 4 for details.

TURNING ON THE SERVER

Turn on the server and follow the on-screen instructions for setup.

IMPORTANT: Before turning on the server:

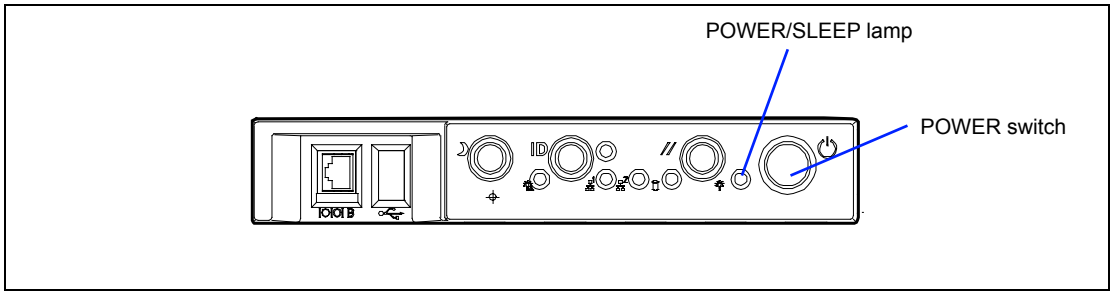
- Some optional boards require setups with the SETUP utility before installation. If the server has a PCI board with the PCI-to-PCI bridge installed, the SETUP utility is enabled to launch. Check on the board specifications to find out whether it requires pre-installation setups before actually installing the board.
- Some installed optional devices or connected peripheral devices require setups before proceeding to the next step.

To use the server with no optional devices installed besides the graphic board, install a desired OS to the server.

1. Make sure that the floppy disk drive contains no floppy disk and the CD-ROM drive contains no bootable CD-ROM.
2. Press the POWER switch.

NOTES:

- If the power cord is connected to the power control unit such as the UPS, turn on the power control unit.
- Connect the power cord and wait a few seconds before pressing the POWER switch. The POWER switch does not work in a few seconds after connecting the power cord due to BMC (Baseboard Management Controller) firmware start-up.



The POWER/SLEEP lamp on the front of the server comes on.

In a few seconds, the NEC logo appears on the screen and the Power On Self-Test (POST) begins.

The POST runs automatically when you power on the server or reset it with a keyboard operation (**Ctrl** + **Alt** + **Delete**). The POST runs diagnostics, initializes the server, sets interrupt vectors, detects installed peripheral devices, and boots the operating system (if installed). See Chapter 2 for detailed description on POST.

If the server halts before completing the POST, the POST emits a beep code indicating a fatal system error requiring immediate attention. (See Chapter 8, "Troubleshooting," for troubleshooting information.)

During memory test, the POST displays the amount of memory it was able to access and test. Depending on the amount of installed memory, it may take several minutes to complete the memory test.

NOTE: The factory-set is defined to hide the POST screen with the NEC logo screen. You can always change the NEC logo screen to the POST screen by pressing **Esc**. To change the start-up screen, use the BIOS setup utility, "SETUP." (See Chapter 4 for details.)

During the POST, you will see the banner message to prompt you to launch the BIOS SETUP utility stored in ROM on system board or on an installed option board.

Start the BIOS SETUP utility appropriate to your system environment to change the BIOS setup. For the BIOS SETUP for the server, see Chapter 4. For the BIOS SETUP for the option board, refer to the manual that comes with the option board.

INSTALLING OPERATING SYSTEM

See Chapter 5 for installing the Microsoft Windows 2000.

To install the other operating system listed above, contact your service representative.

IMPORTANT:

- Use NEC EXPRESSBUILDER for initial setup of your server. The NEC EXPRESSBUILDER is a support software for the server. It simplifies the process of installing and configuring your server. See Chapter 6 for details on NEC EXPRESSBUILDER.
- Before installing the operating system, adjust the system date and time by using the BIOS setup utility "SETUP". See Chapter 4 detail.

INSTALLING UTILITIES

Install the utilities that come with the server. See Chapter 6 for details.

MAKING BACKUP COPIES OF SYSTEM INFORMATION

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Set the NEC EXPRESSBUILDER CD-ROM in the CD-ROM drive and reboot the system.
2. Select [Tools].
3. Select [Off-line Maintenance Utility].
4. Select [System Information Management].
5. Set a floppy disk in the floppy disk drive.
6. Select [Save].

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Chapter 4

Configuring Your Server

This chapter describes Basic Input Output System (BIOS) configuration.

When you install the server for the first time or install/remove optional devices, thoroughly read this chapter for better understanding and correct setups.

SYSTEM BIOS ~ SETUP ~

The SETUP utility is provided to make basic hardware configuration for the server. This utility is pre-installed in the flash memory of the server and ready to run.

The server is configured with the correct parameters using the SETUP utility and shipped in the best conditions. Thus, you don't need to use the SETUP utility in most cases. However, you might wish to use the SETUP utility in the cases described below.

IMPORTANT:

- The SETUP utility is intended for system administrator use only.
- The SETUP utility allows you to set a password. The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters of the SETUP utility. With the User password, system parameters available for viewing and changing are limited.
- Do not set any password before installing the OS.
- The server contains the latest version of the SETUP utility. Dialog boxes appear on your SETUP utility, thus, may differ from descriptions in this manual. If you find anything unclear, see the online help or ask your service representative.

Starting SETUP Utility

To run the SETUP utility, perform the following procedures:

1. Turn on the power of the server.

 The NEC logo appears on the screen (the POST screen may appear depending on the setting in SETUP.).

 After a while, any of the following messages appears at the bottom of the screen.

 Pattern 1:

   ```
   Press <ESC> to enter boot selection menu
   Press <F2> to enter SETUP or <F12> to Network
   ```

 Pattern 2:

   ```
   Press <ESC> to enter boot selection menu
   Press <F2> to enter SETUP, <F4> Service Partition, <F12> to Network
   ```

 Or

 Pattern 3:

   ```
   Press <ESC> to enter boot selection menu
   Press <F1> to resume, <F2> to enter Setup, <F12> to Network
   ```

 Pattern 4:

   ```
   Press <ESC> to enter boot selection menu
   Press <F1> to resume, <F2> to enter Setup, <F4> Service Partition, <F12> Network
   ```

 * The displayed message varies depending on the device status.

2. Press **F2** to start the SETUP utility and display its Main menu.

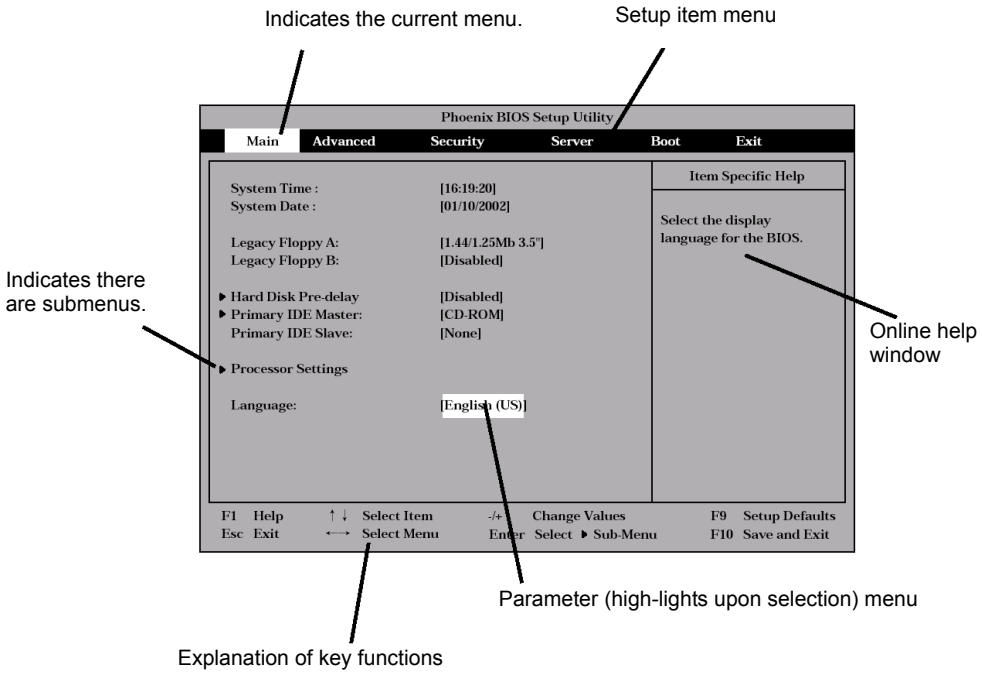
 If you have previously set a password with the SETUP utility, the password entry screen appears. Enter the password.

 Up to three password entries will be accepted. If you fail to enter the password correctly for three consecutive times, the server halts. (You can no longer proceed.) Power off the server.

 NOTE: The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters. With the User password, system parameters available for viewing and changing are limited.

Description on On-Screen Items and Key Usage

Use the following keyboard keys to work with the SETUP utility. (Key functions are also listed at the bottom of the screen.)



Cursor (↑, ↓):	Selects an item on the screen. The highlighted item is currently selected.
Cursor (←, →):	Selects the Main, Advanced, Security, System Hardware, Boot, or Exit menu.
– and **+**:	Changes the value (parameter) of the selected item. When a submenu option (an option preceded by "➤") is selected, these keys are disabled.
Enter	Press **Enter** to select (determine) parameters.
Esc	Displays the previous screen.
F1:	Press **F1** when you need help on SETUP operations. The help screen for SETUP operations appears. Press **Esc** to return to the previous screen.
F9:	Sets the parameter of the currently displayed item back to the factory set parameter.
F10:	Sets the parameter back to the one stored by the server before the SETUP utility was started.

Configuration Examples

The following describes examples of configuration required to use software-link features or for system operations.

Link with Management Software

To link with the temperature monitoring feature of NEC ESMPRO Agent

Select [Server] - [Thermal Sensor] - [Enabled].

To control power supply of the server with NEC ESMPRO Manager via the network

Select [Advanced] - [Advanced Chipset Control] - [Wake On Lan] - [Enabled].

Select [Server] - [AC-LINK] - [StayOff].

UPS

To link power supply with the UPS

- To power on the server when power is supply from the UPS

 Select [Server] - [AC-LINK] - [Power On].

- To keep the server off-powered even when power is supplied from the UPS if the POWER switch was used to power off

 Select [Server] - [AC-LINK] - [Last State].

- To keep the server off-powered even when power is supplied from the UPS

 Select [Server] - [AC-LINK] - [StayOff].

Boot

To change the boot order of devices connected to the server

Select [Boot] and specify the boot order.

To display POST check results

Select [Advanced] - [Boot-time Diagnostic Screen] - [Enabled].

You can also press **Esc** while the NEC log is on the screen to display POST check results.

To control from the HW console

Select [Server] - [Console Redirection] and set each item.

Memory

To enable the memory degradation feature

Select [Advanced] - [Memory/Processor Error] - [Halt].

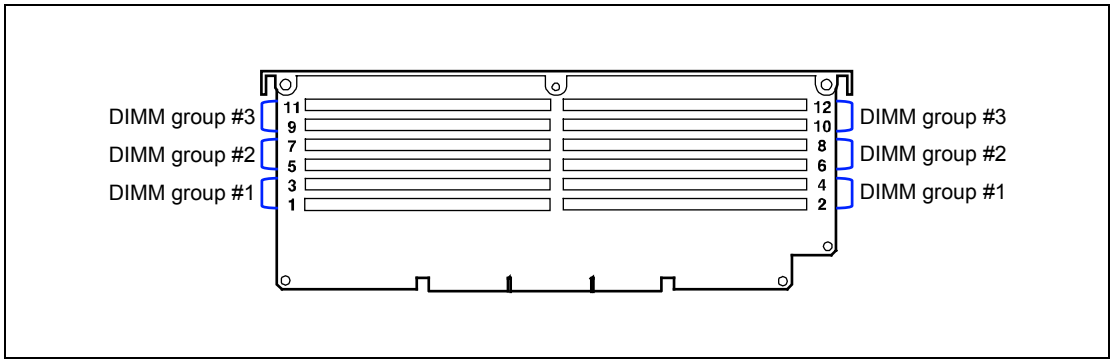
To check the installed memory (DIMM board) status

Select [Advanced] - [Memory Configuration] and check the status indications.

The on-screen DIMM group numbers and socket locations on the baseboard are associated as shown in the following figure.

To clear the memory (DIMM board) error information

Select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes] and reboot.



To enable the memory mirroring / online sparing memory feature

Select [Advanced] - [Memory Configuration] - [Online Sparing/Mirroring Memory] and set each.

CPU

To enable the CPU degradation feature

Select [Advanced] - [Memory/Processor Error] - [Halt].

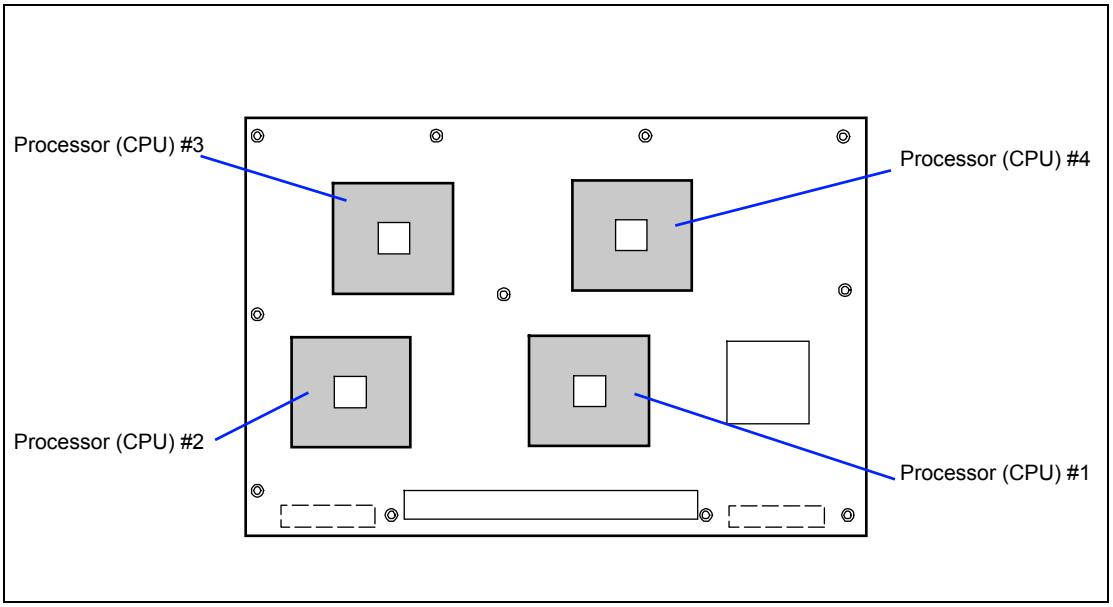
To check the installed CPU status

Select [Main] - [Processor Settings] and check the status indications.

The on-screen CPU numbers and socket locations on the baseboard are associated as shown in the following figure.

To clear the CPU error information

Select [Main] - [Processor Settings] - [Processor Retest] - [Yes] and reboot.



Security

To set passwords on the BIOS

Select [Security] - [Set Supervisor Password] and enter a password.

Supervisor password and User password can be set separately, and only User password has a restriction to access to SETUP utility.

To enable/disable the POWER switch and DUMP switch

- To disable

 Select [Security] - [Power Switch Inhibit] - [Enabled].

- To enable

 Select [Security] - [Power Switch Inhibit] - [Disabled].

IMPORTANT: Enabling [Power Switch Inhibit] disables forced shutdown (see Chapter 8) as well as power on/off using the POWER switch.

To set the secure mode

Select [Security] - [Secure Mode] and set each item.

External Devices

To set up external devices

Select [Advanced] - [I/O Device Configuration] and set up each device.

Internal Devices

To set up internal PCI devices of the server

Select [Advanced] - [PCI Configuration] and set up each device.

To clear the hardware configuration data (after installing/removing internal devices)

Select [Advanced] - [Reset Configuration Data] - [Yes].

PCI Hot Plug

To install the PCI board with the PCI hot plug

Select [Advanced] - [PCI Configuration] - [Hot Plug PCI Control] - [Minimum/Middle/Maximum*]

* The setting varies depending on the PCI board subject to the hot plug. See the table below.

N code	Board name	Setting Value
N8104-85F	100BASE-TX Adapter	Minimum
N8104-103F	1000BASE-T Adapter	Minimum

Select [Advanced] - [PCI Configuration] - [Hot Plug PCI Control] - [Empty Bus Default Speed] - [PCI Slots 5-6*]/[PCI Slots 7-8*] and set the frequency of the boards to be installed.

* If the hot plugs are provided for PCI Slot 5-6 or PCI Slot 7-8, previously set the speeds of the slots to meet those of the boards to be installed.

Saving the Configuration Data

To save the BIOS configuration data

Select [Exit] - [Exit Saving Changes] or [Save Changes].

To discard changes to the BIOS configuration data

Select [Exit] - [Exit Discarding Changes] or [Discard Changes].

To resume the default BIOS configuration data (may differ from factory-set value)

Select [Exit] - [Load Setup Defaults].

To save the current value as user default

Select [Exit] - [Save Custom Defaults].

To load the user-defined default

Select [Exit] - [Load Custom Defaults].

Menu and Parameter Descriptions

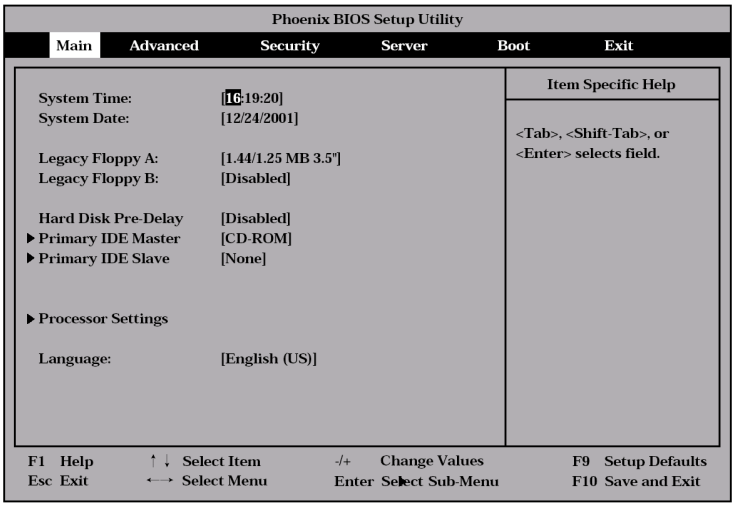
The SETUP utility has the following six major menus:

- Main
- Advanced
- Security
- Server
- Boot
- Exit

To set minute functions, select a submenu from the above menus. The following describes available functions and parameters, as well as the factory-set, for each menu.

Main

After entering SETUP, the Main menu appears first. To display a submenu, position the cursor on a selection that has a submenu (preceded by symbol ➤) and press **Enter**.



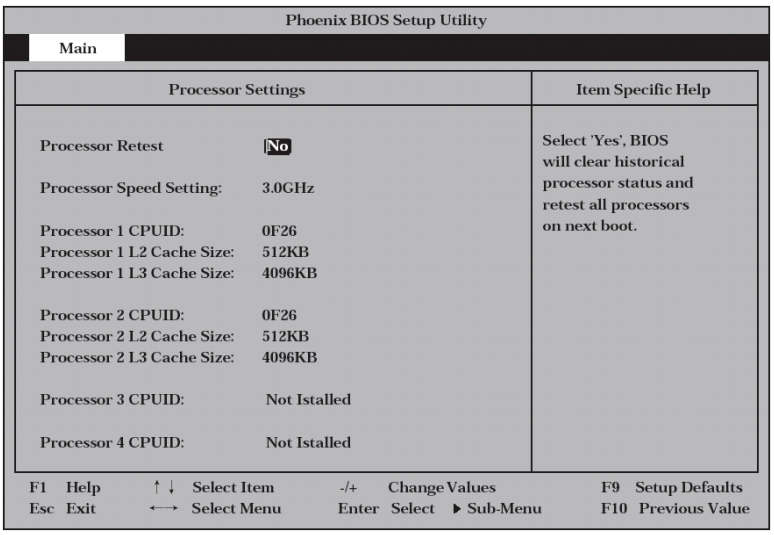
The items which can be set on the Main menu screen and their functions are described below.

Option	Parameter	Description	Your Setting
System Time	HH:MM:SS	Set the time.	
System Date	MM/DD/YYYY	Set the date.	
Legacy Floppy A	Disabled 1.2MB 5.25" 720Kb 3.5" [1.44/1.25MB 3.5"] 2.88MB 3.5"	Set the settings of floppy disk drive A (standard configuration). Normally set to "1.44/1.25MB 3.5".	
Legacy Floppy B	[Disabled] 1.2MB 5.25" 720Kb 3.5" 1.44/1.25MB 3.5" 2.88MB 3.5"	Set the settings of floppy disk drive B. Set to "Disabled" since the server does not support drive B.	
Hard Disk Pre-Delay	[Disabled] 3 seconds 6 seconds 9 seconds 12 seconds 15 seconds 21 seconds 30 seconds	Set the waiting time in first accessing to the IDE device during POST.	
Primary IDE Master/Primary IDE Slave	–	Set the information on the device connected to each channel on the submenu. The settings of some items may be changed. However, leave the items as they are at the shipment.	
Language	English (US) French German Spanish Italian	Select the language used for SETUP.	

[]: Factory-set

Processor Settings

Selecting "Processor Settings" on the Main menu shows the following submenu.



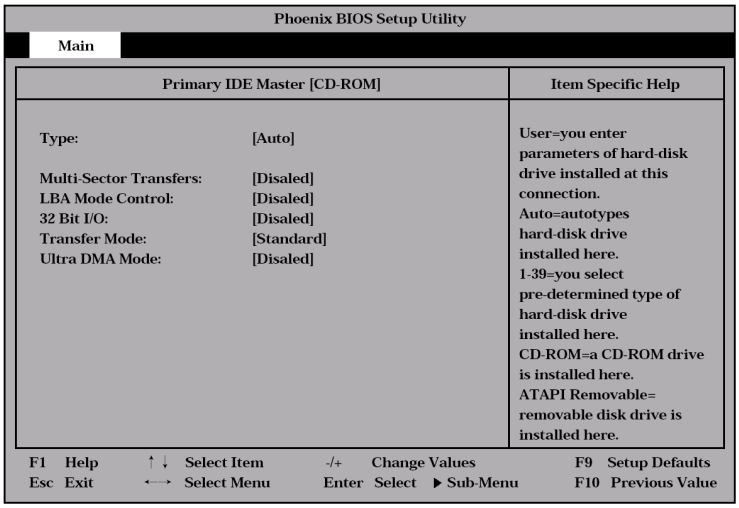
See the table below for the items.

Option	Parameter	Description	Your Setting
Processor Retest	[No] Yes	Clears the error information on the CPU.	
Processor Speed Setting	–	Indicates the frequency of the CPU.	
Processor 1-4 CPUID	–	A numeral indicates the ID of processor. "Disabled" indicates that the processor is defected by BMC. "Not Installed" indicates that the processor is not installed. (Display only)	
Processor 1-4 L2 Cache Size	–	Indicates the L2 cache of processor.	
Processor 1-4 L3 Cache Size	–	Indicates the L3 cache of processor.	
Hyper-Threading Technology	Disabled [Enabled]	Setting this item to "Enabled" allows the hyper-threading technology to be used in the ACPI mode. From OS that supports Hyper-Threading Technology feature, the specified number of processors is twice as many as the actual number of the installed processors.	

[]: Factory-set

Primary IDE Master/Primary IDE Slave

Selecting "Primary IDE Master" or "Primary IDE Slave" on the Main menu shows the following submenu.



See the following table for the items.

Option	Parameter	Description	Your Setting
Type	[Auto] None CD-ROM IDE Removable ATAPI Removable Other ATAPI User	Set the IDE device to be the master. The selection of "Auto" causes the device to be detected automatically during execution of POST. "None" disables the connected device.	
Cylinders	1-2048	Indicates the number of cylinders (display only). *1, *2	
Heads	1-16	Indicates the number of read/write heads (display only). *1, *2	
Sectors	1-64	Indicates the number of sectors on each track (display only). *1, *2	
Maximum Capacity	–	Indicates the drive capacity (display only). *2	
Multi-Sector Transfers	[Disabled] 2 Sectors 4 Sectors 8 Sectors 16 Sectors	Indicates the status of multi-sector transfer controlled by BIOS. *3	
LBA Mode Control	[Disabled] Enabled	Indicates the status of the LBA (Logical Block Access) controlled by BIOS. *3	
32 Bit I/O	[Disabled] Enabled	Specify whether the 32-bit IDE data transfer is enabled or disabled.	

Option	Parameter	Description	Your Setting
Transfer Mode	[Standard] Fast PIO 1 Fast PIO 2 Fast PIO 3 Fast PIO 4 FPIO 3/DMA 1 FPIO 4/DMA 4	Indicates the data transfer mode between drives controlled by BIOS. *3	
Ultra DMA Mode	[Disabled] Mode 0 Mode 1 Mode 2 Mode 3 Mode 4	Indicates the Ultra-DMA mode of data transfer between drives controlled by BIOS. *3	

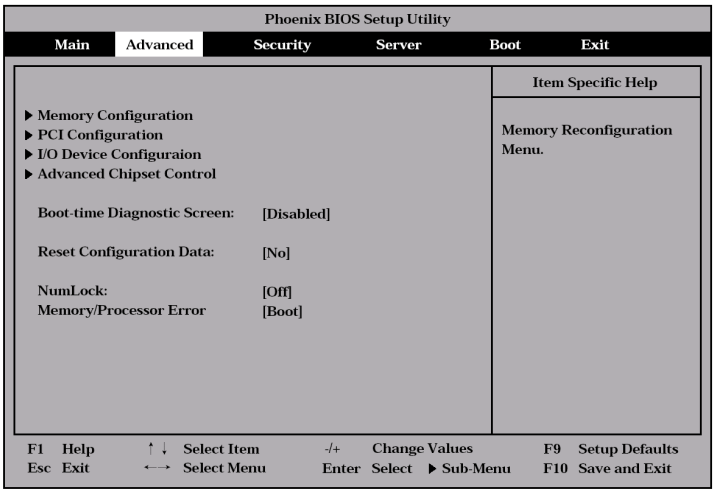
[]: Factory-set

*1 Selectable only when the Type is set to "User".
*2 Displayed only when the Type is set to "User".
*3 Displayed only when the Type is set to "Auto".

Advanced

The Advanced menu appears if you move the cursor to the position of "Advanced."

To display a submenu, position the cursor on a selection that has a submenu (preceded by symbol ➤) and press **Enter**.



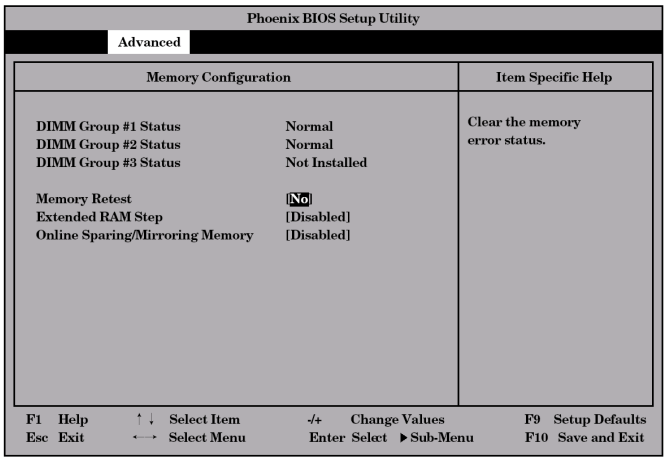
See the table below for the items.

Option	Parameter	Description	Your Setting
Boot-time Diagnostic Screen	[Disabled] Enabled	Specify whether the self-diagnosis (POST) running screen is displayed or not on booting. If this item is set to "Disabled," the "NEC" logo appears during POST. (Pressing **Esc** in the status causes the screen display to be switched to the POST execution screen. The Boot-time Diagnostic Screen is automatically enabled if the Console Redirection is enabled.	
Reset Configuration Data	[No] Yes	Select "Yes" to clear the extended system configuration data area (system information stored by POST). The parameter is changed to "No" after the system is booted.	
NumLock	On [Off]	Specify whether the numlock is enabled or disabled on booting.	
Memory/ Processor Error	[Boot] Halt	Indicates whether POST is paused once at the occurrence of a CPU or memory error during the execution of POST. When CPU error or Memory error is encountered, the utility is not paused at the end of POST if this item is set to "Halt" and even though "POST Error Pause" of "Server" menu is "Enabled".	

[]: Factory-set

Memory Configuration

Selecting "Memory Configuration" on the Advanced menu shows the following screen.



See the table below for the items.

Option	Parameter	Description	Your Setting
DIMM Group #1 - #3 Status	Normal Not installed Disabled	Indicates the current memory status. "Normal" indicates that the memory devices operate normally. "Disabled" indicates that one or more memory devices are defected. "Not Installed" indicates that no memory devices are installed. (Display only)	
Memory Retest	[No] Yes	Clears the DIMM group error status information.	
Extended RAM Step	1MB 1KB Every-Location [Disabled]	"1MB" indicates that the memory test is done in the unit of 1MB. "1KB" indicates that the memory test is done in the unit of 1KB. "Every-Location" indicates that every memory device is tested. "Disabled" indicates that only memory initialization is done.	
Online Sparing/Mirroring Memory	[Disabled] Sparing Mirroring	Specify whether the Memory Mirroring / Online Spare Memory feature is enabled or disabled. See Chapter 9 for details.	

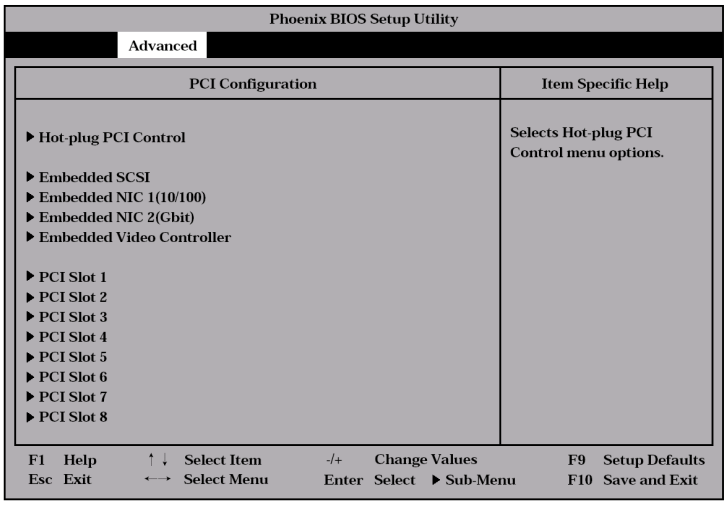
[]: Factory-set

NOTES:

- To enable memory mirroring /online spare memory feature, memory boards in DIMM group #1 and #3 must be the same capacities and type.
- Contact your service representative if you need to use these features.

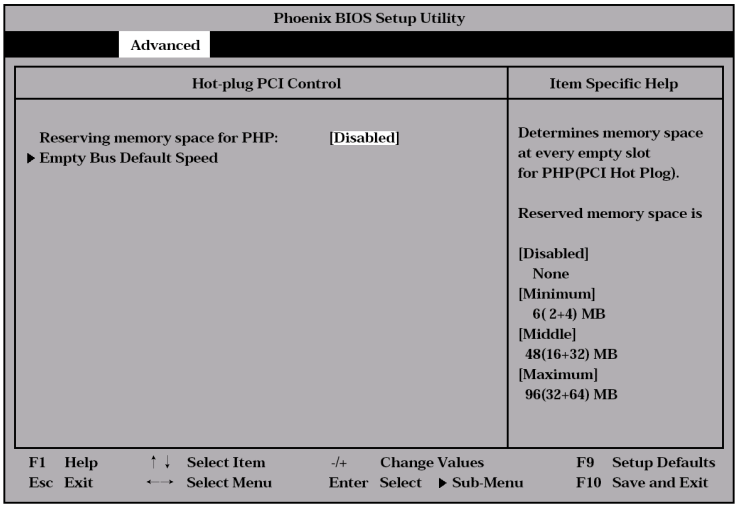
PCI Configuration

Selecting "PCI Configuration" on the Advanced menu shows the following screen. Selecting an item on the screen allows the proper submenu to appear.



Hot-plug PCI Control

Selecting "Hot-plug PCI Control" on the PCI Configuration submenu shows the following screen.



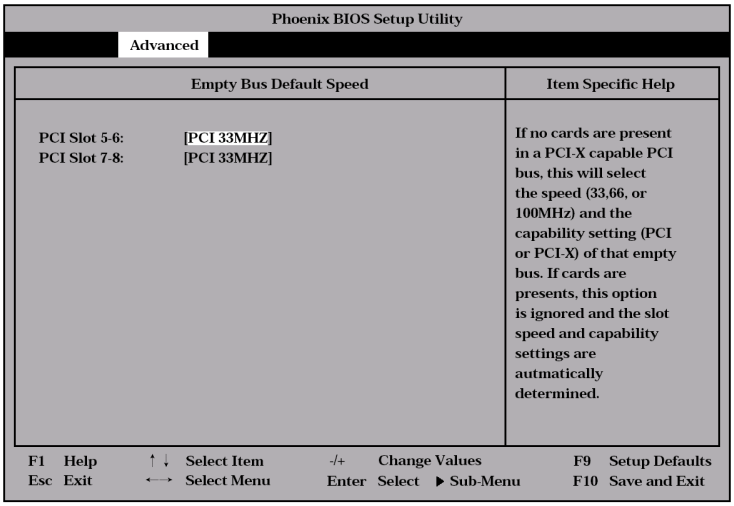
See the table blow for the items.

Option	Parameter	Description	Your Setting
Reserving memory space for PHP	[Disabled] Minimum Middle Maximum	Determines memory space at every empty slot for PHP (PCI Hot-plug). Reserved memory space is: [Disabled] None [Minimum] 6 (2+4) MB [Middle] 48 (16+32) MB [Maximum] 96 (32+64) MB	
Empty Bus Default Speed	-	Refer to Empty Bus Default Speed submenu.	

[]: Factory-set

Empty Bus Default Speed

Selecting " Empty Bus Default Speed " on the Hot-plug PCI Control submenu shows the following screen.



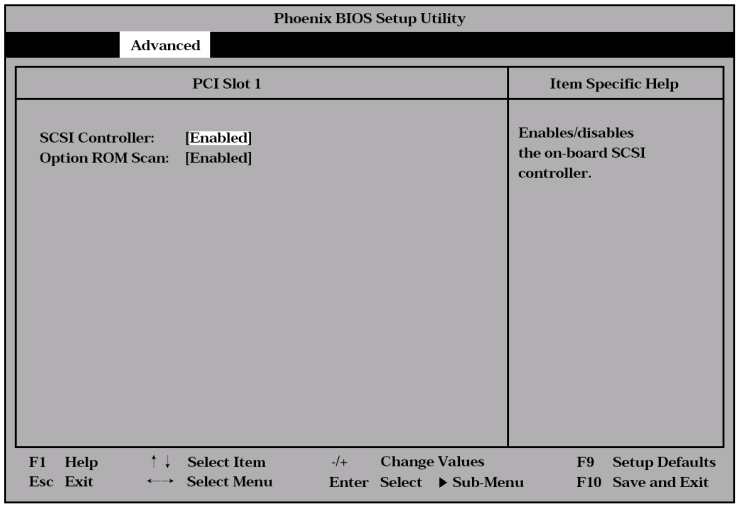
See the table blow for the item.

Option	Parameter	Description	Your Setting
PCI Slot 5-6 PCI Slot 7-8	[PCI 33MHz] PCI 66MHz PCI-X 66MHz PCI-X 100MHz	Selects the types of PCI board and frequency to be installed to the PCI slots 5 – 6 or 7 – 8. The parameter must be selected before installing the PCI board with hot-plug (This option is ignored and appropriate parameter of the installed board is applied to the slot by the system after installing the board and rebooting the system.).	

[]: Factory-set

Embedded SCSI/Embedded NIC/Embedded Video Controller

Selecting "Embedded SCSI", "Embedded NIC", or "Embedded Video Controller" on the PCI Configuration submenu shows the following screen.



See the table blow for the items.

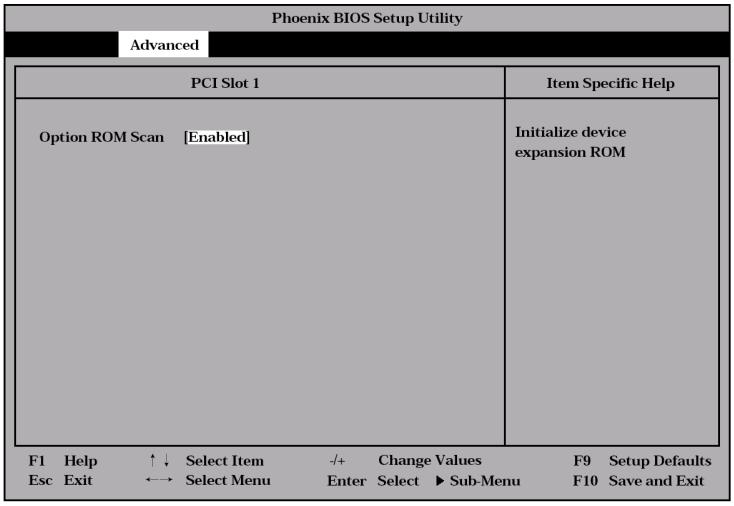
Option	Parameter	Description	Your Setting
SCSI Controller LAN Controller 1 (10/100) LAN Controller 2 (Gbit) Video Controller	[Enabled] Disabled	Indicates whether the on-board controller is enabled or disabled.	
Option ROM Scan*	[Enabled] Disabled	Displays the submenu for indicating whether the expansion of BIOS of on-board controller is enabled or disabled.	

[]: Factory-set

* Only displayed for SCSI and LAN controllers.

PCI Slot 1 – PCI Slot 8

Selecting each menu on the PCI Configuration submenu shows the following screen.



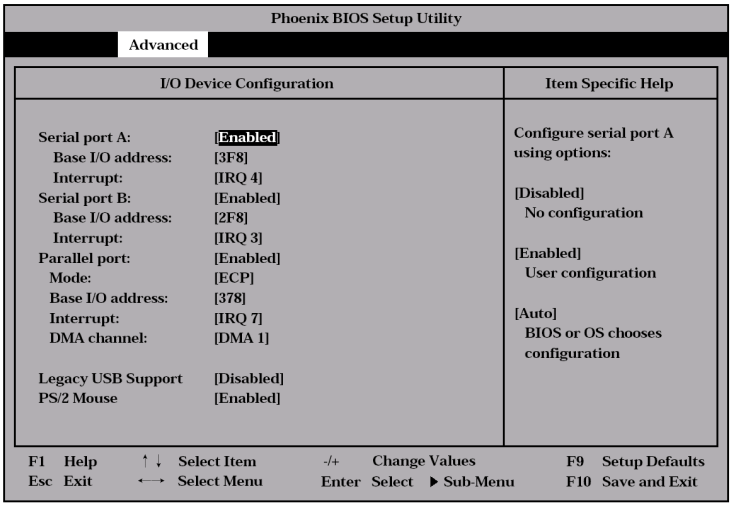
See the table for the item.

Option	Parameter	Description	Your Setting
Option ROM Scan	[Enabled] Disabled	Disables/enables the Option ROM BIOS on the PCI bus. When the graphic accelerator board is installed or the disk array controller or SCSI controller boards to be installed are connected to the hard disk in which OS is installed, set this item to "Enabled." When the LAN controller board with installation of the option ROM BIOS is used but the board does not provide network booting, set this item to "Disabled."	

[]: Factory-set

I/O Device Configuration

Selecting "I/O Device Configuration" on the Advanced menu shows the following screen..



See the table below for the items.

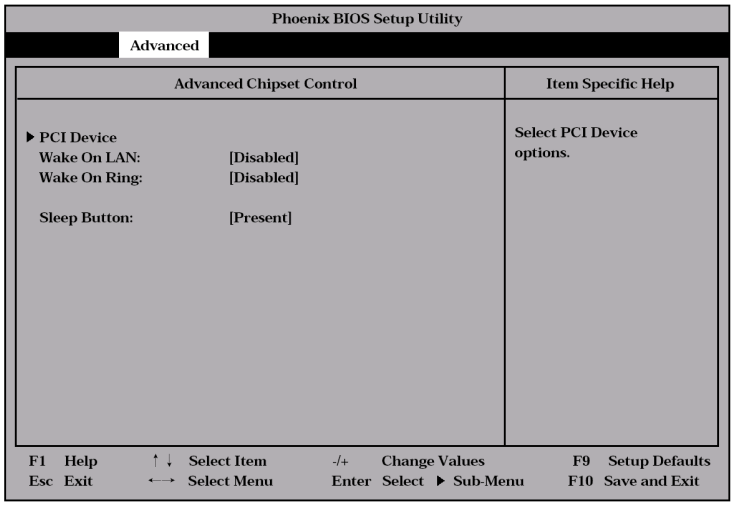
IMPORTANT: Note that the interrupt and/or base I/O address are not overlapped with others. If the value set for the interrupt or base I/O address is used in another resource, the yellow asterisk (*) appears. Reset any item with the yellow asterisk properly.

Option	Parameter	Description	Your Setting
Serial Port A	Disabled [Enabled] Auto	Specify whether serial port A is enabled or disabled.	
Base I/O Address	[3F8] 2F8 3E8 2E8	Selects the base address and interrupt (IRQ) for serial port A. These menus are displayed if the Serial port A is enabled.	
Interrupt	IRQ 3 [IRQ 4]		
Serial Port B	Disabled [Enabled] Auto	Specify whether serial port B is enabled or disabled.	
Base I/O Address	3F8 [2F8] 3E8 2E8	Selects the base address and interrupt (IRQ) for serial port B. These menus are displayed if the Serial port B is enabled.	
Interrupt	[IRQ 3] IRQ 4		
Parallel Port	Disabled [Enabled] Auto	Specify whether the parallel port is enabled or disabled.	
Mode	Output Only Bi-directional EPP [ECC]	Selects the parallel port operation mode, base address, interrupt (IRQ), and DMA channel for the parallel port. These menus are displayed if the Parallel Port is enabled.	
Base I/O Address	[378] 278		
Interrupt	IRQ 5 [IRQ 7]		
DMA channel	[DMA 1] DMA 3		
Legacy USB Support	[Disabled] Enabled	Specify whether the USB keyboard is made available in OS which does not support USB formally.	
PS/2 Mouse	Disabled [Enabled]	Specify whether the mouse is enabled or disabled.	

[]: Factory-set

Advanced Chipset Control

Selecting "Advanced Chipset Control" on the Advanced menu shows the following screen. Positioning the cursor on a menu (item preceded by symbol "➤") and pressing **Enter** allows the appropriate submenu.



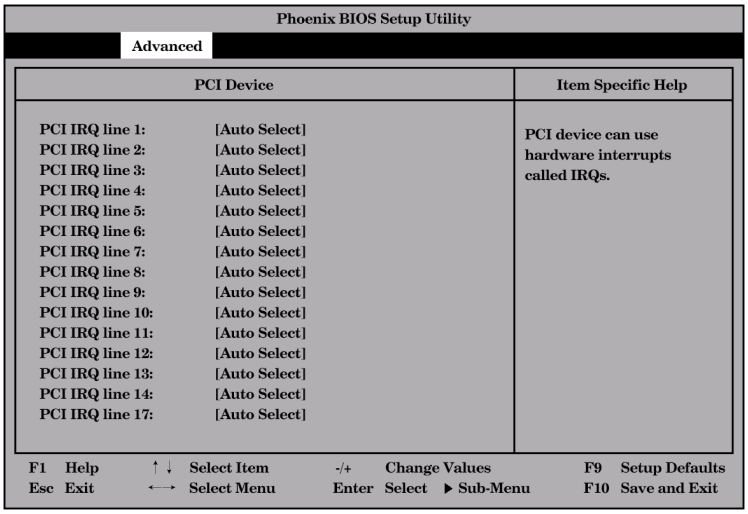
See the table below for the items.

Option	Parameter	Description	Your Setting
Wake On LAN	[Disabled] Enabled	Specify whether the remote power-on function through network is enabled or disabled.	
Wake On Ring	[Disabled] Enabled	Specify whether the remote power-on function through a serial port is enabled or disabled.	
Sleep Button	[Present] Absent	Determine whether SLEEP switch is masked or unmasked. Selecting "Absent" disables the SLEEP switch after booting up.	

[]: Factory-set

PCI Device

Selecting "PCI Device" on "Advanced Chipset Control" of the Advanced menu shows the following screen.



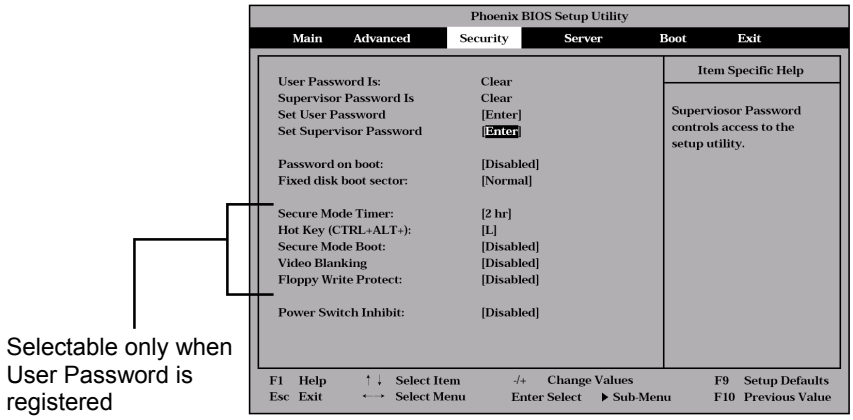
See the table below for the items.

Option	Parameter	Description	Your Setting
PCI IRQ line 1 - 14 PCI IRQ line 17-32	Disabled [Auto Select] 3 4 5 7 9 10 11 14 15	Set the assignment of each of 16 interrupt signals on the PCI bus to a specific IRQ request. Parameters "5," "10," and "11" cannot be selected if they are the same as those set for BMC IRQ in the Server menu.	

[]: Factory-set

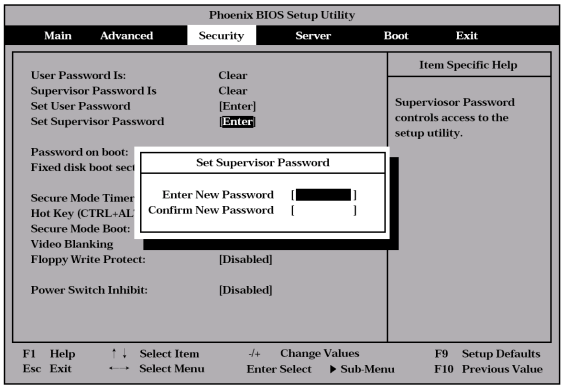
Security

Positioning the cursor to "Security" shows the following screen.



If you press **Enter** with the selection of either "Set Supervisor Password" or "Set User Password," such a screen as shown below appears (the screen shown in the figure below appears when "Set Supervisor Password" is selected).

Specify the passwords on the dialog box. Enter each of the passwords with up to seven characters including alphanumerics and symbols.



IMPORTANT:

- Set the passwords only after OS is installed.
- If you forget the passwords, contact your service representative.

See the table below for the items.

Option	Parameter	Description	Your Setting
Set User Password	Up to seven alphanumeics	Press **Enter** to display the user password input screen. For this password, accessing to the SETUP menu is restricted.	

Option	Parameter	Description	Your Setting
Set Supervisor Password	Up to seven alphanumeics	Press **Enter** to display the supervisor password input screen. This password enables all the SETUP menus to be accessed. This setting can be done only on login with the password input of "Supervisor" at start of SETUP.	
Password on boot	[Disabled] Enabled	Specify whether the passwords are entered or not on booting. At first the supervisor password must be set. If the supervisor password is set and this option is invalid, BIOS determines that a user is booting.	
Fixed disk boot sector	[Normal] Write Protect	Prevents data from being written to hard disks.	
Secure Mode Timer	2 min 5 min 10 min 20 min 1 hr [2 hr]	Specify the period from no input from the keyboard or mouse to the point at which the system enters into the secure mode.	
Hot Key (CTRL+ALT+)	[L]	Specify the key with which the secure mode is started. Press the selected key with the **Ctrl** and **Alt** pressed to start the secure mode.	
Secure Mode Boot	[Disabled] Enabled	Specify whether the server is operated in the secure mode at the start of the server.	
Video Blanking	[Disabled] Enabled	Specify whether the monitor is disconnected if the server is entered into the secure mode.	
Floppy Write Protect	[Disabled] Enabled	Specify whether data write to the floppy disk inserted into the floppy disk drive is enabled or disabled in the secure mode.	
Power Switch Inhibit	[Disabled] Enabled	Specify whether the power switch is enabled or disabled. If this item is set to "Enabled," the power cannot be turned off by using the POWER switch (including the forced shutdown). The system cannot also enter the power saving mode by pressing the SLEEP switch.	

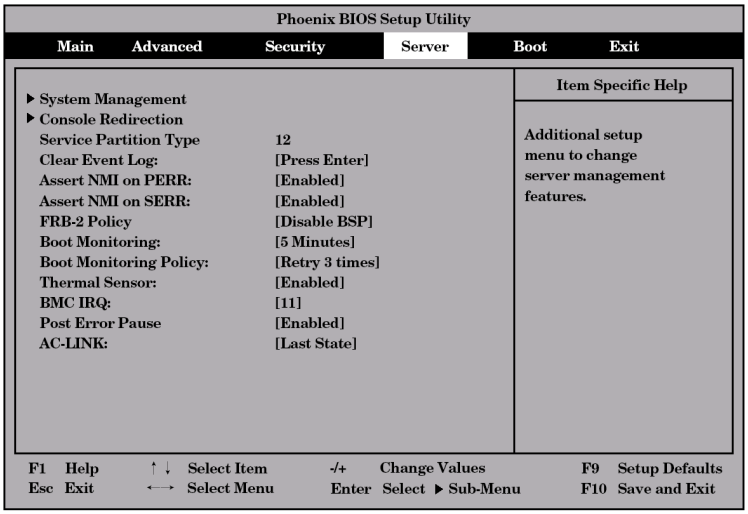
[]: Factory-set

NOTE: The Secure Mode is used to restrict access from unauthorized users. In the Secure Mode, the POWER switch, SLEEP switch, RESET switch, keyboard and mouse are disabled. The lamps on the keyboard flash in order from the ScrollLock lamp, the CapsLock lamp, and the NumLock lamp. To resume server operation in the normal state from the Secure Mode, enter the user password from the keyboard and press **Enter** key.

Server

Positioning the cursor on "Server" shows the Server menu.

The items which can be set on the Server menu and their functions are described below. For the setting, first select "System Management" or "Console Redirection" and press **Enter** to display the proper submenu.



See the table below for the items.

Option	Parameter	Description	Your Setting
Service Partition Type	–	Indicates the type of the service partition.	
Clear Event Log	[Press Enter]	Press **Enter** and select "Yes" to initialize the system event log.	
Assert NMI on PERR	Disabled [Enabled]	Indicates whether PCI PERR is supported or not. If this item is set "Enabled", the system offers an error through the NMI when an error occurred.	
Assert NMI on SERR	Disabled [Enabled]	Indicates whether PCI SERR is supported or not. If this item is set "Enabled", the system offers an error through the NMI when an error occurred.	
FRB-2 Policy	Disable FRB2 Timer [Disable BSP] Do Not Disable BSP Retry 3 Times	Set this item to "Disable BSP".	

Option	Parameter	Description	Your Setting
Boot Monitoring	[Disabled] 5 Minutes 10 Minutes 15 Minutes 20 Minutes 25 Minutes 30 Minutes 35 Minutes 40 Minutes 45 Minutes 50 Minutes 55 Minutes 60 Minutes	Indicates whether the boot monitoring function is enabled or disabled on booting. To use this function, install NEC ESMPRO Agent. Do not use this function if the system is booted from OS without installation of NEC ESMPRO Agent or CD-ROM. Set this item to "Disabled" if ARCServe uses the Disaster Recovery Option.	
Boot Monitoring Policy	[Retry 3 Times] Retry Service Boot Always Retest	Appears when the boot monitoring feature is enabled. This item indicates the processing at the occurrence of timeout during boot monitoring. If [Retry 3 times] is selected, the system is reset after the occurrence of timeout and OS boot is retried up to three times. The failure in the third boot causes the boot to be tried from the service partition. If [Retry Service Boot] is selected, the system is reset after the occurrence of timeout and OS boot is retried up to three times. Then the boot is tried from the service partition for three times. If [Always Reset] is selected, the system is reset after the occurrence of timeout and OS boot is retried repeatedly.	
Thermal Sensor	Disabled [Enabled]	Indicates whether the temperature sensor monitoring function is enabled or disabled.	
BMC IRQ	Disabled 5 10 [11]	Indicates the IRQ of the BMC interrupt.	
Post Error Pause	Disabled [Enabled]	Indicates whether POST is aborted once at the end of POST if an error occurs during the execution of POST.	
AC-LINK	Stay Off [Last State] Power On	Indicates the AC-LINK function. Shows the state of the power of the server.	

[]: Factory-set

The table below shows the operation when the AC power to the server is turn off once and then on again, depending on the setting of "AC-LINK."

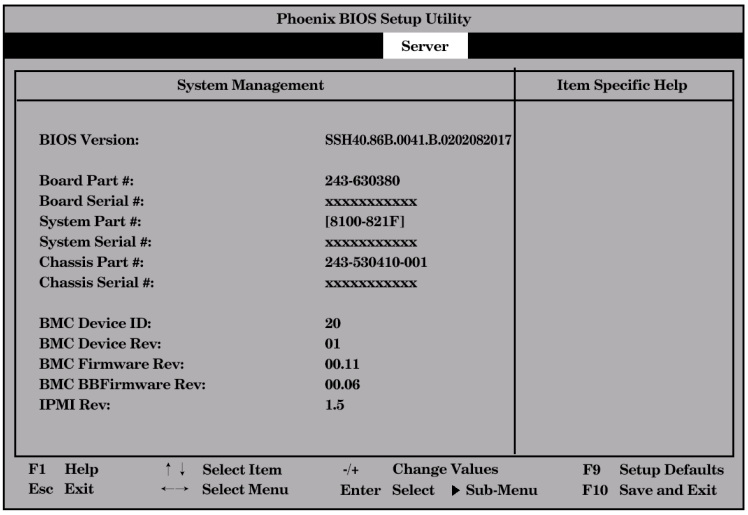
System status before AC power off	Setting of AC-LINK		
	Stay Off	Last State	Power On
Operating	Off	On	On
Aborting (DC power being off also)	Off	Off	On
Forced shutdown	Off	Off	On

* Press the power switch continuously at least four seconds. This forcibly turns off the power.

IMPORTANT: Set this item to "Power on" in order to link the AC power source supplied from UPS when the server is connected to UPS.

System Management

Selecting "System Management" on the Server menu shows the following screen.



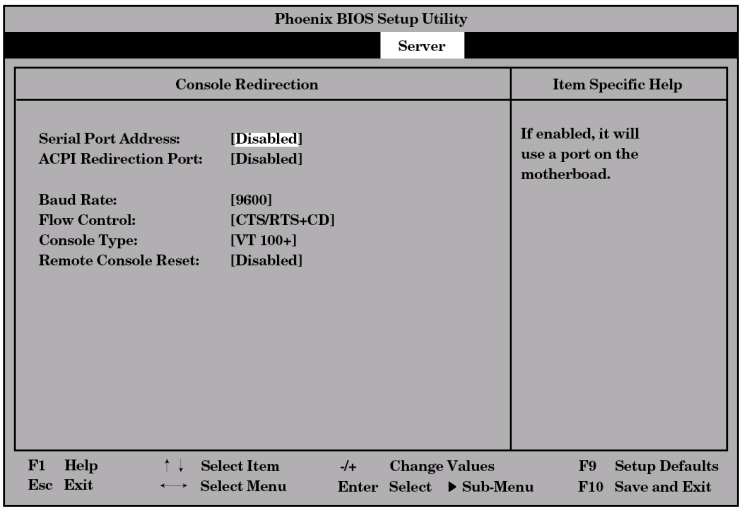
See the table below for the items.

Option	Parameter	Description	Your Setting
BIOS Version	–	Indicates the version of BIOS. (Display only)	
Board Part #	–	Indicates the baseboard information. (Display only)	
Board Serial #	–		
System Part #	–	Indicates the system information. (Display only)	
System Serial #	–		
Chassis Part #	–	Indicates the chassis information. (Display only)	
Chassis Serial #	–		
BMC Device ID	–	Indicates the BMC (Baseboard Management Controller) information. (Display only)	
BMC Device Rev	–		
BMC Firmware Rev	–		
BMC BBFirmware Rev	–		
IPMI Rev	–	Indicates the version of Intelligent Platform Management Interface (IPMI) supported by BMC.	
SDR Rev	–	Indicates the revision of SDR (Sensor Data Record). (Display only)	
PIA Rev	–	Indicates the revision of PIA. (Display only)	
Primary HSBP Rev	–	Indicates the revision of the primary HSBP (Hot-Swap Back Plane) board normally installed. (Display only)	

[]: Factory-set

Console Redirection

Selecting "Console Redirection" on the Server menu shows the following screen.



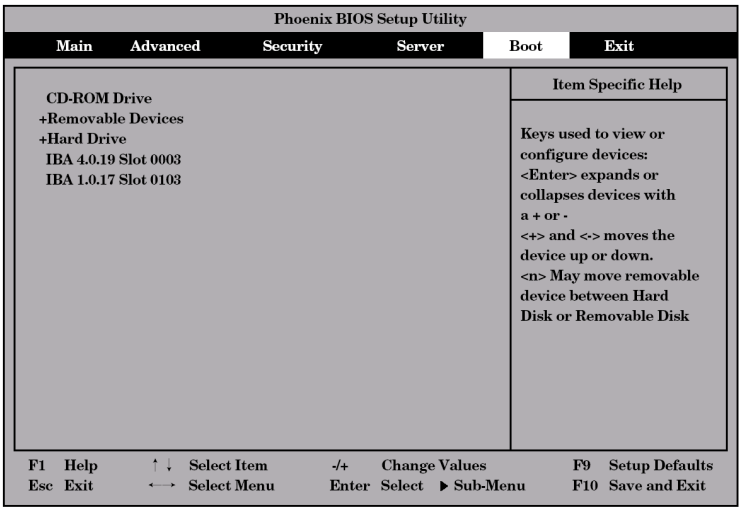
See the table below for the items.

Option	Parameter	Description	Your Setting
Serial Port Address	[Disabled] On-Board Com A On-Board Com B	Selects the port to be used as the redirection port. The parameters specified in I/O device configuration submenu is used as address and interrupt.	
ACPI Redirection Port	[Disabled] On-Board Com A On-Board Com B	Specify the I/O port address or interrupt level used in ACPI headless console redirection. If [Disabled] is selected, console redirection feature is disabled.	
Baud Rate	[9600] 19.2k 38.4k 57.6k 115.2k	Specify the baud rate used for the interface with successive hardware consoles.	
Flow Control	None XON/XOFF CTS/RTS [CTS/RTS+CD]	Specify the flow control method.	
Console Type	PC ANSI [VT100+] VT-UTF8	Specify the console type.	
Remote Console Reset	[Disabled] Enabled	Specify whether the reset from remote console is enabled or disabled.	

[]: Factory-set

Boot

Positioning the cursor on "Boot" shows the Boot menu which is used to set the boot priority.



The server searches for devices in the order set in this menu on booting. Finding the boot software, the server starts the software.

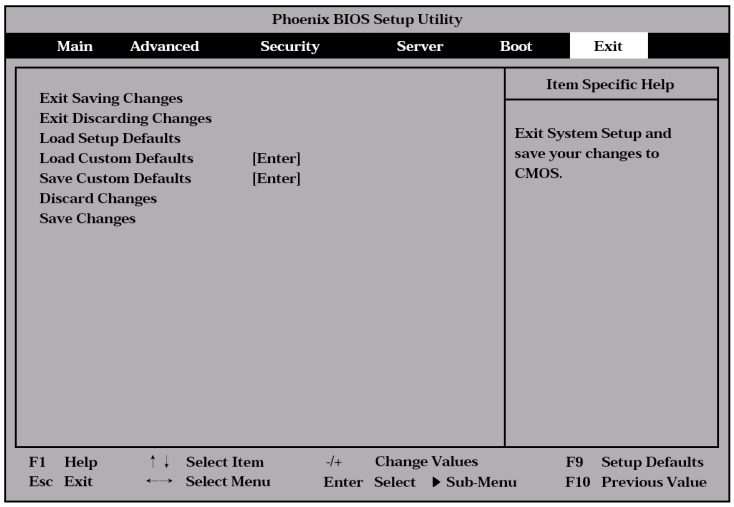
The priority of the boot devices can be changed by using the ↑, ↓, **+**, and **-** keys. Move the cursor to the desired device with the ↑ or ↓ key and change the priority with the **+** or **-** key.

IMPORTANT: To boot NEC EXPRESSBUILDER, set the priority of the devices as shown in the figure above.

Exit

Positioning the cursor to "Exit" shows the Exit menu.

The options on the menu are described below.



Exit Saving Changes

Select this item to terminate SETUP after saving the newly selected information in CMOS (non-volatile memory). The selection of "Exit Saving Changes" causes the confirmation screen to appear.

If you select "Yes," SETUP is terminated with the newly selected information saved in CMOS (non-volatile memory). Then the server automatically reboots the system.

Exit Discarding Changes

Select this item to terminate SETUP without saving the newly selected information in CMOS (non-volatile memory).

Selecting "Yes" allows SETUP to be terminated without storage of the modified information. If the setting value is modified, the confirmation screen will appear.

Selecting "No" allows SETUP to be terminated without storage of the modified information. If you select "Yes" in the next screen, SETUP is terminated with the modified information saved in CMOS. Then the server automatically reboots the system.

Load Setup Defaults

Select this item to return all the values of SETUP to the default values. Selecting "Load Setup Defaults" causes the confirmation screen to appear.

Select "Yes" to return the values to the default values. Select "No" to return to the Exit menu screen.

Load Custom Defaults

If you select this menu and press **Enter**, the saved custom default values are loaded.

Save Custom Defaults

If you select this menu and press **Enter**, the parameters set currently are saved as the custom default values. After the storage, the Load Custom Defaults menu appears.

Discard Changes

Select this item to return the values modified currently to the previous values before saving the values to CMOS. Selecting "Discard Changes" causes the confirmation screen to appear.

Select "Yes" to discard the newly selected information and return to the previous values.

Save Changes

Select this item to save the newly selected information to CMOS (non-volatile memory) without the termination of SETUP. Selecting "Save Changes" causes the confirmation screen to appear.

Select "Yes" to save the newly selected information to CMOS (non-volatile memory)

SCSI BIOS ~ SCSI*Select* ~

The SCSI*Select* utility is provided to configure the SCSI controller on the baseboard (or the SCSI controller on an optional board). This utility may be started with a simple key operation while POST is in progress and requires no specific start-up disk.

Using SCSI*Select* Utility

Use the SCSI*Select* utility mainly to set the transfer speed of connected SCSI devices. The SCSI devices include those installed in the 5.25-inch device bays and backup devices, such as an external DAT and MO, but not hard disks.

IMPORTANT: SCSI configuration must be made on a per-SCSI controller basis with a utility. The server contains one SCSI controller. When you added optional SCSI controllers, you need to make configuration for each SCSI controller in addition to the standard internal SCSI controller. Some additional SCSI controllers may require a different utility to make changes to the configuration.

Configuring SCSI Controller on Baseboard

The following describes configuration for the SCSI controller on the baseboard of the server.

Running the Utility

To run the utility, perform the following procedures:

1. Power on the Express server.

 Press **Esc** to display the POST execution screen when the following message appears under the NEC logo.

   ```
   Press <ESC> to enter boot selection menu
   ```

 The following message appears while POST is in progress.

 IMPORTANT: The message appears for each additional SCSI controller.

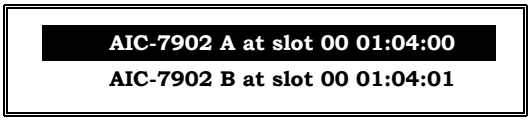
   ```
   Adaptec SCSI BIOS v4.10
   (c) 2002 Adaptec, Inc. All Rights Reserved

   ◀ ◀ ◀ Press <Ctrl> <A> for SCSISelect(TM) Utility! ▶ ▶ ▶
   ```

2. Press and hold **Ctrl** and **A**.

 The SCSI*Select* utility starts and then, the channel selection menu appears.

3. Select "AIC-7902 A at slot 00 01:04:00" or "AIC-7902 B at slot 00 01:04:01" in the channel selection with the cursor keys and press **Enter**.

 The baseboard is provided with two SCSI controller channels. Channel A (01:04:00) indicates the Ultra 320 SCSI connector (for hard disks); and Channel B (01:04:01) indicates the Ultra 320 SCSI connector (for 5.25-inch devices and external SCSI devices).

 Select the device number in the box and press **Enter**.

 The Options menu appears.

4. Select "Option" and press **Enter**.

 If you wish to format a disk, verify disk media, or display a list of devices and their SCSI Ids, select "SCSI Disk Utilities". If you wish to configure the adapter or a device, select "Configure/View Host Adapter Settings".

Exiting the Utility

To exit the utility, press Esc until a message prompts you to exit (if you changed any setting, you are prompted to save the changes before you exit).

Configure/View Host Adapter Settings

The Configure/View Host Adapter Settings has the following menu items and parameters. Read descriptions to select a correct parameter for each menu item.

Configuration

```
SCSI Bus Interface Definitions
SCSI Controller ID ---------------------------------------- 7
SCSI Controller Parity ------------------------------------ Enabled
SCSI Controller Termination ------------------------------- Automatic

Additional Options
Boot Device Configuration  -------------------------------- Press<Enter>
SCSI Device Configuration---------------------------------- Press<Enter>
Advanced Configuration ------------------------------------ Press<Enter>

<F6> - Reset to Host Adapter Defaults
```

SCSI Bus Interface Definitions

To set three menu items under "SCSI Bus Interface Definitions", select a menu item with the cursor keys (↓ or ↑) and press **Enter** to fix the item. Use the cursor keys (↓ or ↑) for parameter selection. The following table lists menu items, available parameters, and descriptions.

Menu item	Parameter	Description
SCSI Controller ID	0 - [7] - 15	Select "7".
SCSI Controller Parity	[Enabled] Disabled	Select "Enabled".
SCSI Controller Termination	[Enabled] Disabled	Enable or disable the SCSI termination. Select "Enabled".

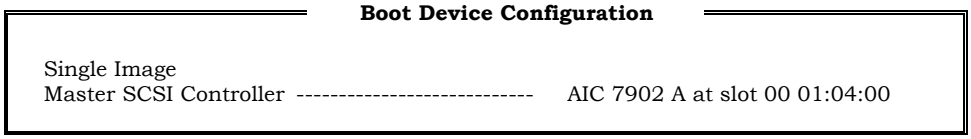
[]: Factory-set

Additional Options

To set three menu items under "Additional Options", select a menu item with the cursor keys (↓ or ↑) and press **Enter** to display its submenu. Then, select a submenu item with the cursor keys (↓ or ↑) and press **Enter** to fix the item. Use the cursor keys (↓ or ↑) for parameter selection.

- **Boot Device Configuration**

 Move the cursor onto "Boot Device Configuration" and press **Enter** to display the following submenu.



 The following table lists submenu items, available parameters, and descriptions.

Submenu item	Parameter	Description
Master SCSI Controller	–	Indicates the channel defined as the master SCSI controller. (display only)

[]: Factory-set

■ SCSI Device Configuration

Move the cursor onto "SCSI Device Configuration" and press **Enter** to display the following submenu.

SCSI Device Configuration

SCSI Device ID	#0	#1	#2	#3	#4	#5	#6	#7
Sync Transfer Rate (MB/Sec)	320	320	320	320	320	320	320	320
Packetized	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
QAS	No	No	No	No	No	No	No	No
Initiate Wide Negotiation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enable Disconnection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Send Start Unit Command	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
BIOS Multiple LUN Support	No	No	No	No	No	No	No	No
Include in BIOS Scan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

SCSI Device ID	#8	#9	#10	#11	#12	#13	#14	#15
Sync Transfer Rate (MB/Sec)	320	320	320	320	320	320	320	320
Packetized	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
QAS	No	No	No	No	No	No	No	No
Initiate Wide Negotiation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enable Disconnection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Send Start Unit Command	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
BIOS Multiple LUN Support	No	No	No	No	No	No	No	No
Include in BIOS Scan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The following table lists submenu items, available parameters, and descriptions.

IMPORTANT: Select a parameter for each submenu item on a per-SCSI ID basis. Verify the SCSI ID of a desired device before configuration.

NOTE: To find out the SCSI ID for the optional device connected, select "SCSI Disk Utilities" on the Options menu and press **Enter**. See "SCSI Disk Utilities" for detail.

Submenu item	Parameter	Description
Sync Transfer Rate (MB/Sec)	[320] 26.8 160 20.0 80.0 16.0 53.4 13.4 40.0 10.0 32.0 ASYN	Select "320". You may need to change the value depending on your optional device. Refer to the manual that comes with your optional device for details.
Packetized	[Yes] No	Optimizes bus utilization and minimizes command overhead to bolster performance by transferring commands, data, and status using Deal Transition (DT) data phases.
QAS	Yes [No]	Quick Arbitration and Selection (QAS) reduces the overhead of control release on the SCSI bus from one device to another to help decrease command overhead and increase bus utilization.
Initiate Wide Negotiation	[Yes] No	Select "Yes" if your SCSI device supports the Wide SCSI interface. Select "No" if not.
Enable Disconnection	[Yes] No	Select "Yes".
Send Start Unit Command	[Yes] No	Select "Yes" to send the command to the hard disk. Otherwise select "No".
BIOS Multiple LUN Support	Yes [No]	Select "No".
Include in BIOS Scan	[Yes] No	Select "Yes".

[]: Factory-set

■ Advanced Configuration

Move the cursor onto "Advanced Configuration" and press **Enter** to display the following submenu.

Advanced Configuration

Reset SCSI Bus at IC Initialization	Enabled
Display <Ctrl><A> Message During BIOS Initialization	Enabled
Extended Int 13 Translation for DOS Driver > 1 GByte	Enabled
POST Display Mode	Diagnostic
SCSI Controller Int 13 Support	Enabled

Options Listed Below Have NO EFFECT if Int 13 Support is Disabled

Domain Validation	Enabled
Support Removable Disks Under Int 13 as Fixed Disks	Disabled
BIOS Support for Bootable CD-ROM	Enabled

The following table lists submenu items, available parameter, and descriptions.

Submenu item	Parameter	Description
Reset SCSI Bus at IC Initialization	[Enabled] Disabled	Select "Enabled".
Display <Ctrl><A> Message During BIOS Initialization	[Enabled] Disabled	Select "Enabled".
Extended Int 13 Translation for DOS Driver > 1 GByte	[Enabled] Disabled	Select "Enabled".
POST Display Mode	Verbose Silent [Diagnostic]	Select "Diagnostic".
SCSI Controller Int 13 Support	[Enabled] Disabled: NOT Scan Disabled: scan bus	Enable or disable SCSI BIOS. Select "Enabled" for most cases other than the following: • To boot the OS from a hard disk connected to any other controller than SCSI controller on the baseboard. (If the controller on the baseboard has no hard disks connected, there is no problem.) • BIOS of the SCSI controller may be disabled to reserve an area in the expansion ROM space if the controller has no hard disks connected.
Domain Validation	[Enabled] Disabled	Select "Enabled".
Support Removable Disks under Int 13 as Fixed Disks	Boot Only All Disks [Disabled]	AIC-78xx BIOS automatically controls the removable disks.
BIOS Support for Bootable CD-ROM	[Enabled] Disabled	Select "Enabled".

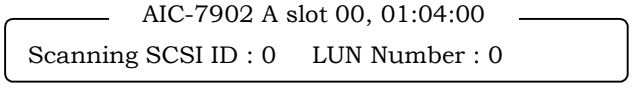
[]: Factory-set

SCSI Disk Utilities

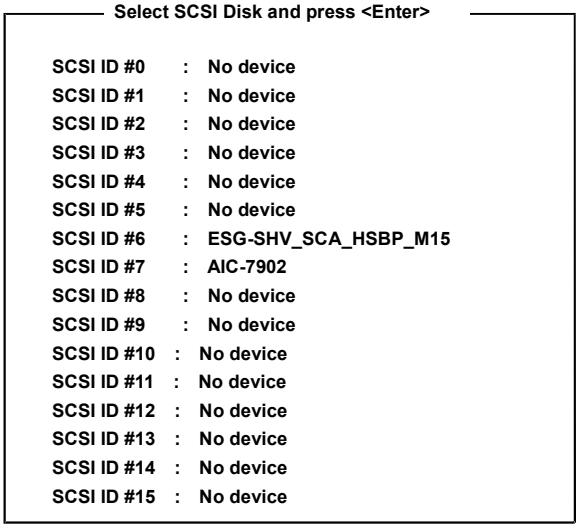
This utility scans the SCSI bus for SCSI devices, reports a description of each device. Run these utilities before configuring SCSI devices.

To enter the utility, select "SCSI Disk Utilities" on the Options menu.

The SCSI ID scan begins displaying the message as shown below.

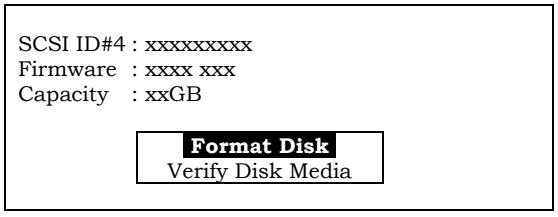


When the SCSI ID scan completes, the screen listing SCSI IDs and associated devices appears.



Find out the SCSI ID for the installed optional on this screen. You can also view the device information by selecting a device and pressing **Enter**.

The following sub menu appears.



The following table lists submenu items and descriptions.

Submenu item	Description
Format Disk	Formats the selected device in the raw level.
Verify Disk Media	Verifies all the sectors in the selected device. If one or more bad sectors are found, reassigns the sectors.

Configuring SCSI Controller on Optional Board

To configure SCSI devices connected to an optional SCSI controller board, use the SCSI BIOS utility provided with the optional SCSI controller board.

Refer to the manual that comes with the optional SCSI controller board for details.

When the server has multiple SCSI controller boards installed, the server first displays the start-up message of the SCSI*Select* utility for the SCSI controller on the baseboard. It then displays the utility start-up message for additional SCSI controllers one by one. The start-up message appears for the SCSI controller board in the PCI #1 slot first, then PCI #2, On board, PCI #3, PCI #4, PCI #5, PCI #6, PCI #7, and finally PCI #8. The message displayed may vary depending on the optional SCSI controller board. Refer to the manual that comes with the optional SCSI controller board for details.

CONFIGURING BASEBOARD JUMPERS

With the pre-installed SETUP utility, you can set desired passwords to protect the data stored in the server against access from unauthorized users. When you forget the passwords, however, you may want clear them. The following describes how to clear these passwords. You can also use the following procedure to clear the CMOS data in the server.

IMPORTANT: Clearing the CMOS data resumes the factory-set configuration data.

To clear passwords or the CMOS data, use the jumper switch on the baseboard of the server.

The following describe the clearing procedure.

⚠ WARNING



Do not disassemble, repair, or alter the server.

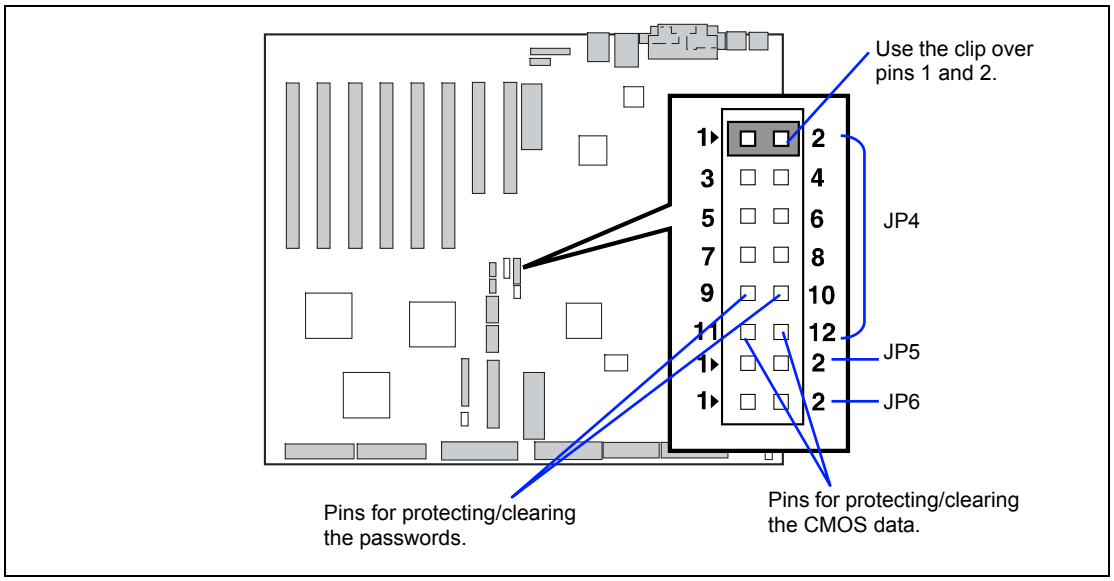
Never attempt to disassemble, repair, or alter the server on any occasion other than described in this manual. Failure to follow this instruction may cause an electric shock or fire as well as malfunctions of the server.

1. Record the current BIOS settings.
2. Power off the server and unplug the power cord.
3. Extend the server from the rack cabinet.
4. Remove the rear access cover from the server (see Chapter 9).
5. Remove the CPU access cover from the server (see Chapter 9).
6. Change the desired jumper switch setting.

IMPORTANT:

- Do not change any other switch settings. Any change may cause the server to fail or malfunction.
- Use the clip over jumper pins (pins 1 and 2) on the baseboard.
- Do not lose the clip.

The following figure illustrates the jumper switch location.



- Pins for protecting/clearing the passwords

 Short-circuit these two pins to clear the passwords.

 Open these two pins to protect the passwords (factory-set).

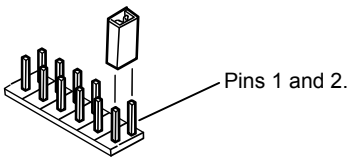
- Pins for protecting/clearing the CMOS data

 Short-circuit these two pins to clear the CMOS data.

 Open these two pins to protect the CMOS data (factory-set).

7. Reassemble the server and press the POWER switch.
8. Run BIOS setup utility to reconfigure the baseboard.
9. Save and exit the utility.
10. Restore the jumper switch setting and power on the server for reconfiguration.

NOTE: Place the clip over the jumper pins 1 and 2 after use to keep the pin.



Chapter 5

Installing the Operating System with Express Setup

This section describes information on using Express Setup to install and configure the following operating systems to the server.

- Microsoft Windows Server 2003
- Microsoft Windows 2000

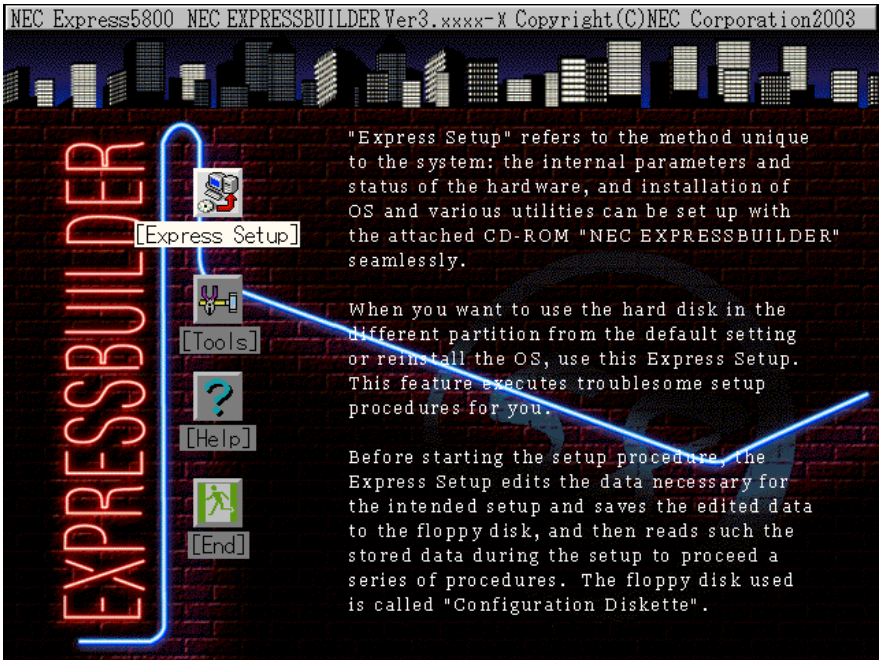
To use the server with the other operating systems described in this section, contact your service representative.

> **IMPORTANT:** Before installing the operating system, adjust the system date and time by using the BIOS set up utility "SETUP." See Chapter 4 for detail.

About Express Setup

"Express Setup" contained in your NEC EXPRESSBUILDER CD-ROM is intended for initial setup of the server. Its automatic installation mode guides the user easily through the process by detailing specific hardware features and providing screen prompts for software selection and configuration. The program loads the utilities and drivers, applies RAID settings, partitions the disk, and installs the desired operating system.

IMPORTANT: Express Setup is intended for the initial setup of the server system. Therefore, it clears the contents of the hard disk.



For Microsoft Windows Server 2003, Windows 2000, Express Setup automatically configures your server and installs the operating system. After a few tasks are completed, all that remains to be done is to remove the NEC EXPRESSBUILDER CD-ROM and insert the Windows CD-ROM, input a product ID number, and acknowledge the license agreement.

For the other operating systems, Express Setup initializes the target disk(s), creates the maintenance partition, and installs the various maintenance utilities from the NEC EXPRESSBUILDER CD-ROM to lead your server to ready-to-install for the desired operating system.

Express Setup uses "Configuration Diskette". The Configuration Diskette is a floppy disk that includes the configuration information for the server setup used in the automatic installation mode. Express Setup will perform all the process of the setup using the information in the floppy disk. During this procedure, you do not have to be in front of the Express server to confirm the state of the setup. Also, using the same Configuration Diskette used before allows you to re-setup your server with the same condition as before.

Express Setup includes two types of installation method.

- Quick start

 Quick start uses the Configuration Diskette that the configuration parameters for server setup are pre-loaded before starting the Express Setup. The configuration parameters are loaded by using the Configuration Diskette Creator (see Chapter 6).

- Normal start

 Normal start is to create the Configuration Diskette after starting the Express Setup.

NOTES:

- Use the blank disk in the accessory box to create Configuration Diskette.
- You can create Configuration Diskette in advance using "Configuration Diskette Creator" included in NEC EXPRESSBUILDER.
- If you create Configuration Diskette in advance, you can abbreviate the items that is necessary to input or select during Express Setup. (You can also create or modify the setup information restored in Configuration Diskette during Express Setup.) If you have a computer other than NEC Express servers that is running with Windows 95/98, Windows NT 3.51 or later, or Windows 2000/Windows Server 2003, we recommend you to edit setup information from the computer in advance using Configuration Diskette Creator.

For more information on how to create Configuration Diskette using Configuration Diskette Creator, see Chapter 6.

Microsoft Windows Server 2003

This subsection provides information on installing Microsoft® Windows® Server 2003 in the server. Read instruction in this section before proceeding the installation.

> **NOTE:** If you install Windows Server 2003 without using Express Setup, see Appendix D.

Installation Notice

This section explains precautions and matters you should be aware of before beginning installation in order to install Windows Server 2003 correctly.

Supported OS on this model

The server supports the following edition:

- Microsoft Windows Server 2003 Standard Edition
 (Described as "Windows Server 2003" from now on.)
- Microsoft Windows Server 2003 Enterprise Edition
 (Described as "Windows Server 2003" from now on.)

On installing other OS, contact sales dealer or the maintenance service representative.

Installing Optional Mass Storage Driver

To install optional mass storage driver, see "Installing Optional Mass Storage Driver" of "Configuration Diskette Creator" in Chapter 6 to create setup inf file.

BIOS Specification

Before installing Windows Server 2003, confirm if the BIOS specification of the hardware is correct. See Chapter 4 to specify them.

NEC ESMPRO Agent

On Windows Server 2003 systems, the ESMPRO Agent needs the necras.sys driver. To install the necras.sys, run the System update from NEC EXPRESSBUILDER CD-ROM.

Windows Server 2003

Express Setup can install Windows Server 2003 operating system. However, note the following issue:

IMPORTANT:

- Before starting the installation, complete all the process of adding the optional device and the setup of Express server mainframe (BIOS and optional board specification)
- The document for installing Windows Server 2003 is also attached to the other software package which is sold separately from NEC, but refer to this document when you install Windows Server 2003 on this model.
- After completing Express Setup, see "Setup for Solving Problems" described later to specify the settings for trouble recovery such as "Specifying Memory Dump".

Installing on the Mirrored Volume

If you want to install Windows Server 2003 on the volume that is mirrored using "Disk Management", invalid the mirroring before operating the installation to set back to the basic disk, and valid the mirroring again after the installation has completed.

Creating, invalid, delete mirror volume can be operated from "Disk Management" in "Computer Management".

Connecting MO Device

If you operate installing Windows Server 2003 with MO device connected, the installation may not be completed normally. In such case, detach MO device and then re-install the system from the beginning.

Media such as DAT

During the OS installation, do not attach the unnecessary media for OS installation to the system, such as DAT.

Connecting Hard Disk

Connect the hard disk that OS is not going to be installed after installing OS.

Creating Partition Size

The minimum size for the partition that the system is to be installed can be calculated from the following formula.

Size necessary to install the system + Paging File Size + Dump File Size
Size necessary to install the system = 2900MB
Paging File Size (Recommended) = Installed Memory Size × 1.5
Dump file Size = Installed Memory Size + 12MB

IMPORTANT:

- The above paging file size is necessary for collecting debug information (memory dump). If you set the default value of paging file size smaller than the 'recommended' value, the accurate debug information (memory dump) may not be collected.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the minimally required partition size will be calculated by the above formula as follows:

2900MB + (512MB * 1.5) + (512MB + 12MB) = 4192MB.

Re-installing to the hard disk which has been upgraded to Dynamic Disk

You cannot re-install Windows Server 2003 with the current partition of the hard disk upgraded to Dynamic Disk kept remained.

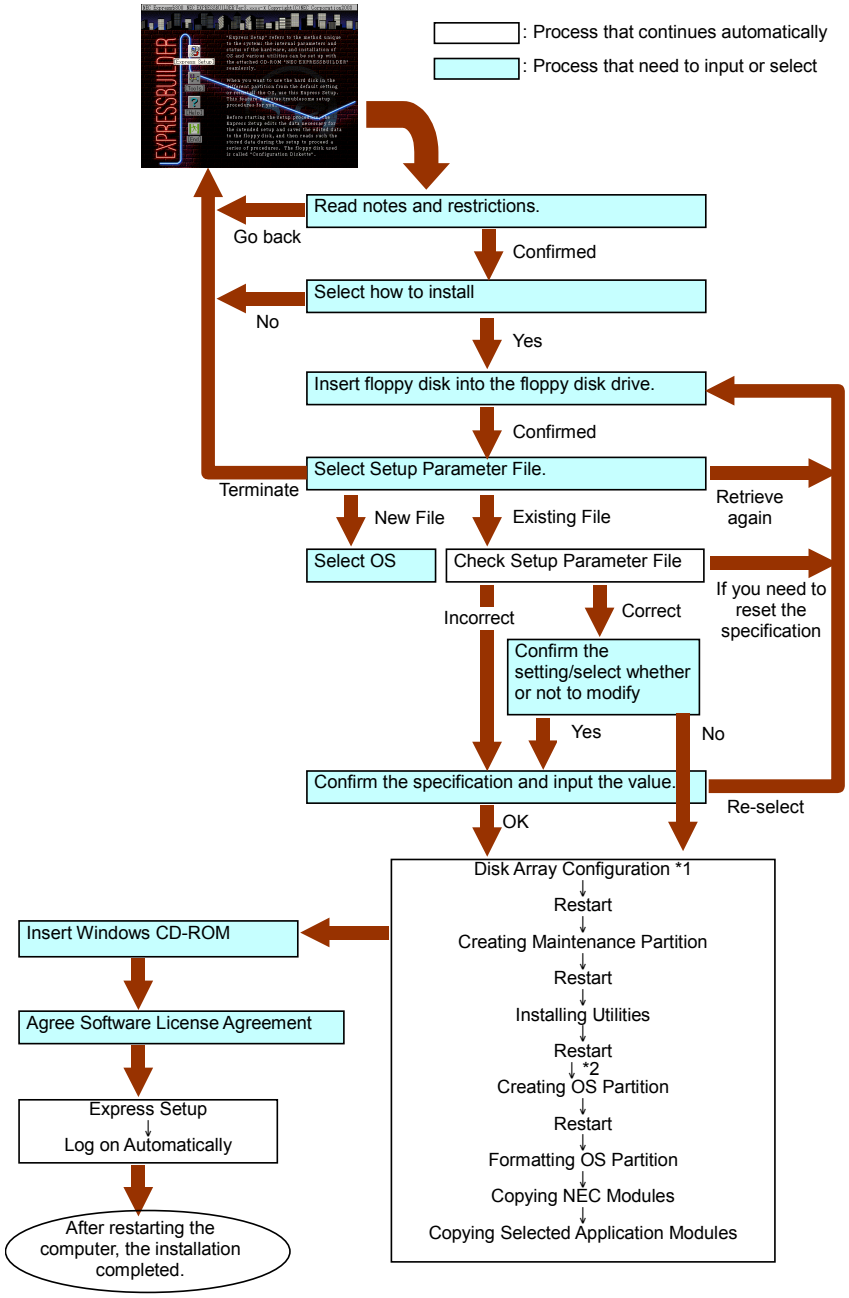
If you want to keep the current partition remained, see Appendix D to re-install the system.

Disk Configuration (Concerning the area displayed as "MAINTE_P")

In disk area, an area displayed as "MAINTE_P" may exist. This area is maintenance partition for saving configuration information and utilities. Do not delete the area.

The Flow of Setup

This section visually describes the flow of the setup operated by Express Setup.



*1 The process is operated only when Disk Array Controller Board is connected and the configuration is specified.

*2 If you select [Others], the process is completed here.

Installing the Windows Server 2003

This section describes on how to setup the system using Express Setup.

Prepare Configuration Diskette. You can operate the installation if you do not have Configuration Diskette specified in advance, but one floppy disk formatted by MS-DOS 1.44MB is necessary also in such case. For Configuration Diskette, use the blank disk in NEC EXPRESSBUILDER package or prepare other floppy disk personally.

IMPORTANT:

- If you modified the system configuration, execute "System Update".
- If you want to modify or add Graphics Accelerator Driver or the drivers of Network Adapter and so on, see Appendix D.

1. Turn the power of peripheral device on, and then turn on the server.
2. Insert NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.
3. Ensure that the floppy disk drive is empty.
4. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

 The system will boot from the CD-ROM and NEC EXPRESSBUILDER starts.
5. Click [Express Setup].

 "Note" will be displayed.
6. Read the instruction carefully and click [OK].

 The message "Insert Configuration Diskette" appears.
7. Insert "Configuration Diskette" into floppy disk drive and click [OK].

NOTE: If you do not have "Configuration Diskette", insert a blank floppy disk formatted by 1.44MB into the floppy disk drive and click [OK].

[Using the specified Configuration Diskette]

The Setup File included in "Configuration Diskette" will be displayed.

1) Select the Setup File name to use during the installation.

NOTE: If there is any problem that can not be modified in the Setup File you selected, the message to set another "Configuration Diskette" appears. In such case, confirm the floppy disk you inserted.

After the Setup File is specified, the message "Do you want to review or modify the Setup File parameters?" is displayed.

2) If you want to edit the information file, click [Review]. If you do not want to edit the information file and continue the installation, click [Skip].

Click [Review] → Go to step 8.

Click [Skip] → Go to step 9.

[Using Blank disk]

1) Click the box under [Setup File Name: (A)] or press **A**.

The input box appears.

2) Input the file name.

[Operating System to Install] appears.

The OS supported by the computer is displayed in the list.

3) Select [Windows Server 2003] you want to install from the list box.

8. Confirm the contents specified during OS installation.

If Disk Array Controller Board is connected to Express server mainframe, the [Configure RAID] screen appears. Confirm the specification, modify if necessary, and then click [Next].

Next, [Basic Information] screen appears. Confirm the specification, modify if necessary, and then click [Next]. ("Supported Computer" shown in the screen differs according to the model.)

After that, click [Next], [Back], or [Help] on the screen to continue. Modify the specification each time if necessary.

IMPORTANT:

- Reserve the partition to install the OS more than the minimally required size.
- If you select "Use Existing Array" at "New/Existing RAID Configuration", the information included in the first partition (excluding maintenance partition) will all be formatted and deleted. The information included in the other partition will be retained. In the figure below, describes the partition which information will be deleted when maintenance partition exists.

First Partition <Maintenance Partition> Retained	Second Partition Deleted	Third Partition Retained	Fourth Partition Retained

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use Existing Array" at "New/Existing RAID Configuration".
- If "Create New Partition" at "New/Existing RAID Configuration" is selected, do not specify the value for the partition more than 120GB.
- If you specify other than 4095MB for the "Installing Partition", it is necessary to convert to NTFS.
- If "Use Existing Array" at "New/Existing RAID Configuration" is selected but the partition other than the one to install Windows Server 2003 does not exist (excluding maintenance partition), Express Setup will reserve the maximum area of the hard disk to install Windows Server 2003.
- You can not go to the next screen if the specification is incorrect.
- On specification, an error may occur in relationship with the specified contents of the former screen and require to go back to modify the specification.
- During the setup, the screen to specify the partition that Windows Server 2003 is to be installed appears. The first 55MB area displayed on the screen is a partition that is used to store the configuration information or utilities unique of the server. We do not recommend to delete this area, but if you do not want to reserve this 55MB area, perform the installation by manual setup. It is unable to delete this area by Express Setup.
- If you specify other than 120GB for the actual area, you may not create the partition specified as the entire area in sizes more than 120GB.

NOTES:

- If you click [Cancel] in [Basic Information] screen, the screen will go back to select the Setup File. [Cancel] exists only in [Basic Information] screen.
- If you click [OK] in [Role of Computer] screen, the setup automatically selects default value for the later specification to continue the installation.

When all the specification has completed, the system reboots automatically.

9. Copy the modules for the optional mass storage driver.

If you want to install the optional mass storage driver, insert the floppy disk attached to mass storage driver into the floppy disk drive and follow the message to operate the installation.

10. Follow the message and take NEC EXPRESSBUILDER CD-ROM and Configuration Diskette out of the CD-ROM drive and floppy disk drive, and insert Windows Server 2003 CD-ROM into the CD-ROM drive.

[Software License Agreement] screen appears.

11. Read the contents carefully and click [I agree.] or press **F8** if you do agree. If you do not agree, click [I disagree] or press **F3**.

IMPORTANT:

- If you do not agree to this agreement, the setup terminates and Windows Server 2003 will not be installed.
- If "NetWare Gateway (and Client) Service" is specified to install, the window to specify the details of "NetWare Gateway (and Client) Service" pops up on the first logon. Specify the appropriate value.

Now the Setup using Express Setup has completed.

Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

PROSet

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhance throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive.
2. The [Windows Explorer] dialog starts.

 * The procedure in the case of the standard start menu

 Click Start menu and click [Windows Explorer].

 * The procedure in the case of the classic start menu

 Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "PROSet.exe" in the following directory.

 CD-ROM DriveLetter:\WINNT\DOTNET\BC11\PROSet\WS03XP32

 The [Intel(R) PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Choose "Typical" and click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finish].
9. Restart the system.

Network Driver

Specify the details of network driver.

Two standard network drivers that are mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

[When PROSet is not installed]

1. The [Local Area Connection Properties] dialog box appears.

 * The procedure in the case of the standard start menu

 1. Click Start menu, Click [Control Panel], Click [Network Connections], and Click [Local Area Connection].

 * The procedure in the case of the classic start menu

 1. Click Start menu, Click [Settings] and Click [Network Connections].

 The [Network Connections] dialog box appears.

 2. Right-click [Local Area Connection] and click [Properties] from pop-up menu.

2. Click [Configure].

 The property dialog box for network adapter appears.

3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.

4. Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel PROSet] dialog box appears.

 * The procedure in the case of the standard start menu

 Click Start menu, point to [Control Panel] and click [Intel PROSet].

 * The procedure in the case of the classic start menu

 1. Click Start menu, point to [Settings] and click [Control Panel].
 2. Double-click [Intel(R) PROSet] on the [Control Panel] window.

2. Click [(Network Adapter Name)] in the list.

3. Click the [Speed] and specify the [Link Speed & Duplex Settings] value the same as the value specified for HUB.

4. Click [Apply] and click [OK].

Specify the other network driver with the same progress above.

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

NOTE: We recommend you to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

Optional Network Board Driver (N8104-80/86/103/111/113)

If you want to utilize optional Network Board, the network driver will be installed automatically.

Therefore, the driver attached to the Network board should not be used.

IMPORTANT: If you want to utilize optional Network Board "N8104-103", open the [Advanced] in PROSet window and change the [Offload TCP Segmentation] value to "Off".

Installing SCSI Controller Driver

If you utilize SCSI controller driver (N8103-65F/75), install it according to the following procedure:

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double-click the SCSI Controller driver which Device Manager lists as unknown device.
3. Click [Update Driver].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select "Don't search. I will choose the driver to install" and click [Next].
6. Click [Have Disk..].
7. Insert "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, enter "a:\" into "copy manufacturer's file from:" and click [OK].
8. Specify the following driver and click [Next].
 - [INITIO INI-A10XU2W PCI SCSI Controller](When N8103-65F board is installed.)
 - [Adaptec SCSI Card 29320ALP - Ultra320 SCSI](When N8103-75 board is installed.)

The installation of the driver is completed.

Restart the system according to the message appeared on the screen.

Setting for Solving Problems

Setup the following issue in advance so that your computer can recover from any trouble precisely and as soon as possible when it should occur.

Memory Dump (Debug Information)

This section describes the procedures for collecting memory dump (debug information) in the server.

IMPORTANT: Cautions for the Memory Dump

- The staff of maintenance service representative is in charge of collecting memory dump. Customers need only to specify the memory dump.
- If any trouble occur after specifying the process below, the message to inform that the system is in short of virtual memory may appear, but continue to start the system. If you re-start the system in such case, memory dump may not be stored correctly.

Follow the procedure below to specify.

1. Select [Control Panel] and click [System].

 The [System Properties] dialog box appears.

2. Select [Advanced] tab.

3. Click [Settings] on the [Startup and Recovery] group box.

IMPORTANT:

- To specify "Complete Memory Dump" to write the debug information is recommended. If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 12MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory.
 Verify the size of the empty space in the debugging information (memory dump) write destination drive.

4. Specify "Complete memory dump" and modify [Dump file:] in the

 [Write debugging information] group box.

 e.g. Write the debug information in D drive write the file name "MEMORY.DMP".

 D:\MEMORY.DMP

5. Click [Settings] on the [Performance] group box.

 The [Performance Options] window appears.

6. Click [Advanced] tab on the [Performance Options] window.

7. Click [Change] on the [Virtual memory] group box.

8. Modify [Initial Size] in the [Paging file size for selected drive] box to the value larger than [Recommended], and click [Set].

 IMPORTANT:

 - Be sure to create memory dump with the size described above on the OS partition. If [Default Size] of the paging file is specified to the value smaller than "Recommended" value, the correct debug information (memory dump) may not be collected.
 - For more information on "Recommended" value, see "Partition Size to be Created" described earlier.
 - To prepare for the situation when any trouble occurred, we recommend you to press dump switch to confirm that the dump will be collected normally in advance.
 - In case the memory is expanded, re-specify the paging file to suit the new memory size.

9. Click [OK].

 The message to restart the system may appear according to the modified specification. In such case, follow the message to restart the system.

Windows Dr. Watson

Windows Dr. Watson is a debugger for application errors. If any application error is detected, Dr. Watson diagnoses the server and logs diagnostic information (log). Follow the procedure below and specify Dr. Watson to collect diagnostic information.

1. Click [Run] on Start menu.
2. Type "drwtsn32.exe" in the [Open] box, and click [OK].

 The [Dr. Watson for Windows] dialog box appears.
3. Specify the location to store the diagnostic information in the [Log File Path] box.

 The diagnostic information will be stored with the file name "DRWTSN32.LOG".

 NOTE: You can not specify network pass. Specify the pass on local computer.
4. Specify the location of crash dump file in the [Crash Dump] box.

 NOTE: "Crash Dump File" is a binary file that can be read with Windows Debugger.
5. Check the following check box on the [Option] box.

 ☐ Dump Symbol Table
 ☐ Dump All Thread Contexts
 ☐ Add To Existing Log File
 ☐ Create Crash Dump File

 For more information on each function above, refer to Online Help.
6. Click [OK].

Network Monitor

Utilizing Network Monitor helps you to investigate and manage with network trouble. To utilize Network Monitor, you need to restart the system after the installation has completed, so we recommend to install Network Monitor before any network trouble may occur.

1. Point to [Settings] from Start menu and click [Control Panel].

 The [Control Panel] dialog box appears.

2. Double-click [Add/Remove Programs].

 The [Add/Remove Programs] dialog box appears.

3. Click [Add/Remove Windows Component].

 The [Windows Components Wizard] dialog box appears.

4. Check the [Management and Monitoring Tools] check box of the component ON and click [Next].

5. If the setup asks to install the disk, insert Windows Server 2003 CD-ROM into CD-ROM drive and click [OK].

6. Click [Complete] in the [Windows Component Wizard] dialog box.

7. Click [Close] in the [Add/Remove Application] dialog box.

8. Close the [Control Panel] dialog box.

To start Network Monitor, point to [Program] → [Administrative Tools] and click [Network Monitor]. For information on how to operate Network Monitor, refer to Online Help.

Installing Maintenance Utilities

Various maintenance utilities are contained in your NEC EXPRESSBUILDER CD-ROM. See Chapter 6 for installing the utilities to your server or management workstations.

Updating the System

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

Log on to the system with the account that has administrative authority (e.g. Administrator) and insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.

[Setup Software] in [Master Control Menu] screen appears, so left-click the item. Click [Update the System] from the menu and the setup will start. After that, follow the message to continue the setup process.

Making Backup Copies of System Information

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive and reboot the system.
2. Select [Tools].
3. Select [Off-line Maintenance Utility].
4. Select [System Information Management].
5. Insert a floppy disk into the floppy disk drive.
6. Select [Save].

Exceptional Setup

This section explains how to setup by the exceptional way. You usually do not have to do as follows. The detailed information is provided by the manual of the Mass Storage Device.

Installation of Mass storage device not to be supported by ExpressSetup

If you would like to install or re-install the OS when the system has new mass storage device not to be supported by NEC EXPRESSBUILDER, you have to set as follows.

1. Read the manual supplied with the mass storage device before setting the server.
2. If the mass storage device is disk array controller, configure the RAID system before running the NEC EXPRESSBUILDER.
3. Boot the system from NEC EXPRESSBUILDER CD-ROM.
4. (a) When the dialog of Disk array configuration appears, check "Use Existing Array".

 (b) Check "Apply OEM-FD for Mass storage device".
5. Copy the driver for the mass storage device in the ExpressSetup.

 Insert the floppy disk attached the mass storage device into the floppy disk drive.

 Continue the ExpressSetup, referring to messages displayed on the display.

Microsoft Windows 2000

This subsection provides information on installing Microsoft® Windows® 2000 in the server. Read instruction in this section before proceeding the installation.

> **NOTE:** If you install Windows 2000 without using Express Setup, see Appendix D.

Installation Notice

This section explains precautions and matters you should be aware of before beginning installation in order to install Windows 2000 correctly.

Supported OS on this model

The server supports the following edition:

- Microsoft Windows 2000 Server version (Described as "Windows 2000" from now on.)
- Microsoft Windows 2000 Advanced Server version (Described as "Windows 2000" from now on.)

On installing other OS, contact sales dealer or the maintenance service representative.

Installing Optional Mass Storage Driver

To install optional mass storage driver, see "Installing Optional Mass Storage Driver" of "Configuration Diskette Creator" in Chapter 6 to create setup inf file.

BIOS Specification

Before installing Windows 2000, confirm if the BIOS specification of the hardware is correct. On BIOS specification, there are some items to specify for the new functions provided from Windows 2000 (Plug and Play, support for USB interface and so on). See Chapter 4 to specify them.

Windows 2000

Express Setup can install Windows 2000 operating system. However, note the following issue:

IMPORTANT:

- Before starting the installation, complete all the process of adding the optional device and the setup of Express server mainframe (BIOS and optional board specification)
- The document for installing Windows 2000 is also attached to the other software package which is sold separately from NEC, but refer to this document when you install Windows 2000 on this model.
- After completing Express Setup, see "Setup for Solving Problems" described later to specify the settings for trouble recovery such as "Specifying Memory Dump".

Installing on the Mirrored Volume

If you want to install Windows 2000 on the volume that is mirrored using "Disk Management", invalid the mirroring before operating the installation to set back to the basic disk, and valid the mirroring again after the installation has completed.

Creating, invalid, delete mirror volume can be operated from "Disk Management" in "Computer Management".

Connecting MO Device

If you operate installing Windows 2000 with MO device connected, the installation may not be completed normally. In such case, detach MO device and then re-install the system from the beginning.

Media such as DAT

During the OS installation, do not attach the unnecessary media for OS installation to the system, such as DAT.

Connecting Hard Disk

Connect the hard disk that OS is not going to be installed after installing the OS.

Creating Partition Size

The minimum size for the partition that the system is to be installed can be calculated from the following formula.

Size necessary to install the system + Paging File Size + Dump File Size
Size necessary to install the system = 1000MB
Paging File Size (Recommended) = Installed Memory Size * 1.5
Dump file Size = Installed Memory Size + 12MB

IMPORTANT:

- The above paging file size is necessary for collecting debug information (memory dump). If you set the default value of paging file size smaller than the 'recommended' value, the accurate debug information (memory dump) may not be collected.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the minimally required partition size will be calculated by the above formula as follows:

1000MB + (512MB * 1.5) + (512MB + 12MB) = 2292MB

NOTES:

If you want to install using Express Setup, calculate the minimally required partition size as follows:

- If you do not apply Windows 2000 Service Pack
 The larger value of either one: 'Minimum Partition Size' described above, or '4095MB'.
- If you want to apply Windows 2000 Service Pack
 The larger value of either one: 'Minimum Partition Size' described above + 850MB or '4095MB'.

Re-installing to the hard disk which has been upgraded to Dynamic Disk

You cannot re-install Windows 2000 with the current partition of the hard disk upgraded to Dynamic Disk kept remained.

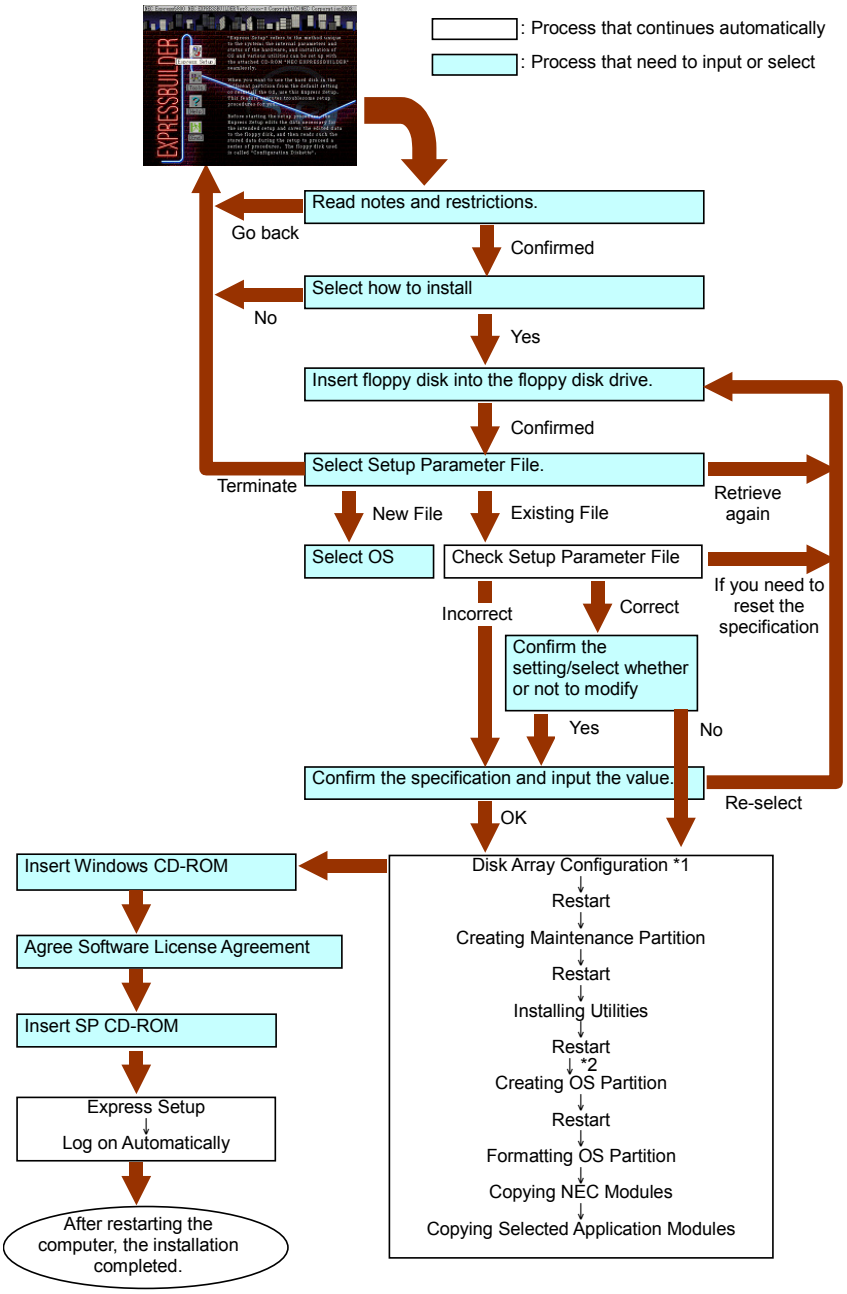
If you want to keep the current partition remained, see Appendix D to re-install the system.

Disk Configuration (Concerning the area displayed as "MAINTE_P")

In disk area, an area displayed as "MAINTE_P" may exist. This area is maintenance partition for saving configuration information and utilities. Do not delete the area.

The Flow of Setup

This section visually describes the flow of the setup operated by Express Setup.



*1 The process is operated only when Disk Array Controller Board is connected and the configuration is specified.

*2 If you select [Others], the process is completed here.

Installing the Windows 2000

This section describes on how to setup the system using Express Setup.

Prepare Configuration Diskette. You can operate the installation if you do not have Configuration Diskette specified in advance, but one floppy disk formatted by MS-DOS 1.44MB is necessary also in such case. For Configuration Diskette, use the blank disk in NEC EXPRESSBUILDER package or prepare other floppy disk personally.

IMPORTANT:

- If you modified the system configuration, execute "System Update".
- If you want to modify or add Graphics Accelerator Driver or the drivers of Network Adapter and so on, see Appendix D.

1. Turn the power of peripheral device on, and then turn on the server.
2. Insert NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.
3. Ensure that the floppy disk drive is empty.
4. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

 The system will boot from the CD-ROM and NEC EXPRESSBUILDER starts.
5. Click [Express Setup].

 "Note" will be displayed.
6. Read the instruction carefully and click [OK].

 The message "Insert Configuration Diskette" appears.
7. Insert "Configuration Diskette" into the floppy disk drive and click [OK].

NOTE: If you do not have "Configuration Diskette", insert a blank floppy disk formatted by 1.44MB into the floppy disk drive and click [OK]. Make sure not to remove the "Configuration Diskette" from the floppy disk drive until the message that allow you to remove it appeared.

[Using the specified Configuration Diskette]

The Setup File included in "Configuration Diskette" will be displayed.

4) Select the Setup File name to use during the installation.

NOTE: If there is any problem that can not be modified in the Setup File you selected, the message to set another "Configuration Diskette" appears. In such case, confirm the floppy disk you inserted.

After the Setup File is specified, the message "Do you want to review or modify the Setup File parameters?" is displayed.

5) If you want to edit the information file, click [Yes]. If you do not want to edit the information file and continue the installation, click [Skip].

Click [Yes] → Go to step 8.

Click [Skip] → Go to step 9.

[Using Blank disk]

6) Click the box under [Setup File Name: (A)] or press **A**.

The input box appears.

7) Input the file name.

[Operating System to Install] appears.

The OS supported by the computer is displayed in the list.

8) Select [Windows 2000] you want to install from the list box.

8. Confirm the contents specified during OS installation.

If Disk Array Controller Board is connected to Express server mainframe, the [Configure RAID] screen appears. Confirm the specification, modify if necessary, and then click [Next].

Next, [Basic Information] screen appears. Confirm the specification, modify if necessary, and then click [Next]. ("Supported Computer" shown in the screen differs according to the model.)

After that, click [Next], [Back], or [Help] on the screen to continue. Modify the specification each time if necessary.

IMPORTANT:

- Reserve the partition to install the OS more than the minimally required size.
- If you select "Use Existing Array" at "New/Existing RAID Configuration", the information included in the first partition (excluding maintenance partition) will all be formatted and deleted. The information included in the other partition will be retained. In the figure below, describes the partition which information will be deleted when maintenance partition exists.

First Partition <Maintenance Partition> Retained	Second Partition Deleted	Third Partition Retained	Fourth Partition Retained

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use Existing Array" at "New/Existing RAID Configuration".
- If "Create New Partition" at "New/Existing RAID Configuration" is selected, do not specify the value for the partition more than the actual area size.
- If you specify other than 4095MB for the "Installing Partition", it is necessary to convert to NTFS.
- If you specify other than 120GB for the actual area, you may not create the partition specified as the entire area in sizes more than 120GB.
- If "Use Existing Array" at "New/Existing RAID Configuration" is selected but the partition other than the one to install Windows 2000 does not exist (excluding maintenance partition), Express Setup will reserve the maximum area of the hard disk to install Windows 2000.
- You can not go to the next screen if the specification is incorrect.
- On specification, an error may occur in relationship with the specified contents of the former screen and require to go back to modify the specification.
- During the setup, the screen to specify the partition that Windows 2000 is to be installed appears. The first 55MB area displayed on the screen is a partition that is used to store the configuration information or utilities unique of the server. We do not recommend to delete this area, but if you do not want to reserve this 55MB area, perform the installation by manual setup. It is unable to delete this area by Express Setup.

NOTES:

- If you click [Cancel] in [Basic Information] screen, the screen will go back to select the Setup File. [Cancel] exists only in [Basic Information] screen.
- If you click [OK] in [Role of Computer] screen, the setup automatically selects default value for the later specification to continue the installation.

When all the specification has completed, the system reboots automatically.

9. Copy the modules for the optional mass storage driver.

If you want to install the optional mass storage driver, insert the floppy disk attached to mass storage driver into the floppy disk drive and follow the message to operate the installation.

10. Follow the message and take NEC EXPRESSBUILDER CD-ROM and Configuration Diskette out of CD-ROM drive, and floppy disk drive, and insert Windows 2000 CD-ROM into CD-ROM drive.

[Software License Agreement] screen appears.

11. Read the contents carefully and click [I agree.] or press **F8** if you do agree. If you do not agree, click [I disagree] or press **F3**.

IMPORTANT:

- If you do not agree to this agreement, the setup terminates and Windows 2000 will not be installed.
- If "NetWare Gateway (and Client) Service" is specified to install, the window to specify the details of "NetWare Gateway (and Client) Service" pops up on the first logon. Specify the appropriate value.

12. If you selected [Apply] on [Apply Service Pack] at Basic Information, follow the procedure below.

1) Follow the message to take Windows 2000 CD-ROM out of CD-ROM drive.

2) Follow the message to insert Windows 2000 Service Pack 1 or later into CD-ROM drive.

Windows 2000 and the specified application will be installed automatically and logon to the system. Install and configure the device drivers.

Now the Setup using Express Setup has completed.

Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

PROSet

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhance throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive.
2. The [Windows Explorer] dialog starts.
3. Run "PROSet.exe" in the following directory.

 CD-ROM DriveLetter:\WINNT\W2K\BC11\PROSet\WIN2K

 The [Intel(R) PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Choose "Typical" and click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finish].
9. Restart the system.

Network Driver

Specify the details of network driver.

Two standard network drivers that are mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

[When PROSet is not installed]

1. The [Local Area Connection Properties] dialog box appears.

 Click Start menu, Click [Settings] and Click [Network Connections].

 The [Network Connections] dialog box appears.

2. Right-click [Local Area Connection] and click [Properties] from pop-up menu.
3. Click [Configure].

 The property dialog box for network adapter appears.

4. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
5. Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel PROSet] dialog box appears.

 Click Start menu, point to [Settings] and click [Control Panel].

2. Double-click [Intel(R) PROSet] on the [Control Panel] window.
3. Click [(Network Adapter Name)] in the list.
4. Click the [Speed] and specify the [Link Speed & Duplex Settings] value the same as the value specified for HUB.
5. Click [Apply] and click [OK].

Specify the other network driver with the same progress above.

> **NOTE:** We recommend you to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setup for Trouble Process" later in this document.

Optional Network Board Driver

If you want to utilize optional Network Board (N8104-80/86/103/111/113), confirm the versions of driver in EXPRESSBUILDER CD-ROM and the version of driver attached to the Network board.

CD-ROM Drive Letter:\WINNT\W2K\BC11\PRO1000\WIN2K\e1000nt5.sys

CD-ROM Drive Letter:\WINNT\W2K\BC11\PRO100\WIN2K\e100bnt5.sys

If the driver attached to the Network board is old, install the driver stored in NEC EXPRESSBUILDER CD-ROM.

Refer to the re-installation procedure described (Appendix E).

Network Driver for (N8104-103/113)
[CD-ROM Drive Letter:\WINNT\W2K\BC11\PRO1000\WIN2K]

Network Driver for (N8104-80/86/111)
[CD-ROM Drive Letter:\WINNT\W2K\BC11\PRO100\WIN2K]

Graphics Accelerator Driver

Standard graphics accelerator drivers that are mounted will be installed automatically. The following is the procedure when it is necessary to install manually.

If you want to utilize optional Graphics Accelerator Driver board, follow the document attached to the board to install the driver.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "Setup.exe" in the following directory.

 <CD-ROM Drive Letter>:\WINNT\W2K\VIDEO\setup.exe.
4. Follow the message to continue the installation.

 If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.
5. Remove the NEC EXPRESSBUILDER CD-ROM from the CD-ROM drive, follow the direction on the screen and restart the system.

Installing SCSI Controller Driver

If you utilize SCSI controller driver (N8103-65F/75), install it according to the following procedure:

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double click the SCSI Controller driver which Device Manager lists as unknown device.
3. Click [Update Driver].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select "Don't search. I will choose the driver to install" and click [Next].
6. Click [Have Disk..].
7. Insert "Windows 2000 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, enter "a:\" into "copy manufacturer's file from:" and click [OK].
8. Specify the following driver and click [Next].
 - [INITIO INI-A10XU2W PCI SCSI Controller](When N8103-65F board is installed.)
 - [Adaptec SCSI Card 29320ALP - Ultra320 SCSI](When N8103-75 board is installed.)

The installation of the driver is completed.

Restart the system according to the message appeared on the screen.

Setting for Solving Problems

Setup the following issue in advance so that your computer can recover from any trouble precisely and as soon as possible when it should occur.

Memory Dump (Debug Information)

This section describes the procedures for collecting memory dump (debug information) in the server.

IMPORTANT: Cautions for the Memory Dump

- The staff of maintenance service representative is in charge of collecting memory dump. Customers need only to specify the memory dump.
- If any trouble occur after specifying the process below, the message to inform that the system is in short of virtual memory may appear, but continue to start the system. If you re-start the system in such case, memory dump may not be stored correctly.

Follow the procedure below to specify.

1. Point to [Settings] in Start menu and click [Control Panel].

 The [Control Panel] dialog box appears.

2. Double-click [System].

 The [System Properties] dialog box appears.

3. Click [Advanced].

4. Click [Startup and Recovery].

5. Enter the location to write the debug information to the text box.

 e.g. Write the debug information in D drive with the file name "MEMORY.DMP".

 D:\MEMORY.DMP

IMPORTANT:

- To specify "Complete Memory Dump" to write the debug information is recommended.
 If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 12MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory.
 Verify the size of the empty space in the debugging information (memory dump) write destination drive.

6. Click [Performance Options].

7. Click [Change] on the [Virtual Memory] dialog box.

8. Modify [Initial Size] in the [Paging File Size for Selected Drive] box to the value larger than [Recommended Size], and click [Specify].

IMPORTANT:

- Be sure to create memory dump with the size described above on the OS partition. If [Default Size] of the paging file is specified to the value smaller than "Recommended" value, the correct debug information (memory dump) may not be collected.
- For more information on "Recommended" value, see "Partition Size to be Created" described earlier.
- To prepare for the situation when any trouble occurred, we recommend you to press dump switch to confirm that the dump will be collected normally in advance.
- In case the memory is expanded, re-specify the paging file to suit the new memory size.

9. Click [OK].

The message to restart the system may appear according to the modified specification. In such case, follow the message to restart the system.

Windows 2000 Dr. Watson

Windows 2000 Dr. Watson is a debugger for application errors. If any application error is detected,

Dr. Watson diagnoses the server and logs diagnostic information (log). Follow the procedure below and specify Dr. Watson to collect diagnostic information.

1. Click [Run] on Start menu.
2. Type "drwtsn32.exe" in the [Open] box, and click [OK].

 The [Dr. Watson for Windows 2000] dialog box appears.
3. Specify the location to store the diagnostic information in the [Log File Path] box.

 The diagnostic information will be stored with the file name "DRWTSN32.LOG".

 NOTE: You can not specify network pass. Specify the pass on local computer.
4. Specify the location of crash dump file in the [Crash Dump] box.

 NOTE: "Crash Dump File" is a binary file that can be read with Windows Debugger.
5. Check the following check box on the [Option] box.

 ☐ Dump Symbol Table
 ☐ Dump All Thread Contexts
 ☐ Add To Existing Log File
 ☐ Create Crash Dump File

 For more information on each function above, refer to Online Help.
6. Click [OK].

Network Monitor

Utilizing Network Monitor helps you to investigate and manage with network trouble. To utilize Network Monitor, you need to restart the system after the installation has completed, so we recommend to install Network Monitor before any network trouble may occur.

1. Point to [Settings] from Start menu and click [Control Panel].

 The [Control Panel] dialog box appears.

2. Double-click [Add/Remove Programs].

 The [Add/Remove Programs] dialog box appears.

3. Click [Add/Remove Windows Component].

 The [Windows Components Wizard] dialog box appears.

4. Check the [Management and Monitoring Tools] check box of the component ON and click [Next].

5. If the setup asks to install the disk, insert Windows 2000 CD-ROM into the CD-ROM drive and click [OK].

6. Click [Complete] in the [Windows Component Wizard] dialog box.

7. Click [Close] in the [Add/Remove Application] dialog box.

8. Close the [Control Panel] dialog box.

To start Network Monitor, point to [Program] → [Administrative Tools] and click [Network Monitor]. For information on how to operate Network Monitor, refer to Online Help.

Installing Maintenance Utilities

Various maintenance utilities are contained in your NEC EXPRESSBUILDER CD-ROM. See Chapter 6 for installing the utilities to your server or management workstations.

Updating the System - Applying Service Pack -

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

Log on to the system with the account that has administrative authority (e.g. Administrator) and insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.

[Setup Software] in [Master Control Menu] screen appears, so left-click the item. Click [Update the System] from the menu and the setup will start. After that, follow the message to continue the setup process and apply Service Pack.

Making Backup Copies of System Information

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive and reboot the system.
2. Select [Tools].
3. Select [Off-line Maintenance Utility].
4. Select [System Information Management].
5. Insert a floppy disk into the floppy disk drive.
6. Select [Save].

Exceptional Setup

This section explains how to setup by the exceptional way. You usually do not have to do as follows. The detailed information is provided by the manual of the Mass Storage Device.

Installation of Mass storage device not to be supported by ExpressSetup

If you would like to install or re-install the OS when the system has new mass storage device not to be supported by NEC EXPRESSBUILDER, you have to set as follows.

1. Read the manual supplied with the mass storage device before setting the server.
2. If the mass storage device is disk array controller, configure the RAID system before running the NEC EXPRESSBUILDER.
3. Boot the system from NEC EXPRESSBUILDER CD-ROM.
4. (a) When the dialog of Disk array configuration appears, check "Use Existing Array".

 (b) Check "Apply OEM-FD for Mass storage device".
5. Copy the driver for the mass storage device in the ExpressSetup.

 Insert the floppy disk attached the mass storage device into the floppy disk drive.

 Continue the ExpressSetup, referring to messages displayed on the display.

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Chapter 6

Installing and Using Utilities

This section describes how to use the NEC EXPRESSBUILDER CD-ROM that comes with your server and to install the utilities stored on the NEC EXPRESSBUILDER.

NEC EXPRESSBUILDER

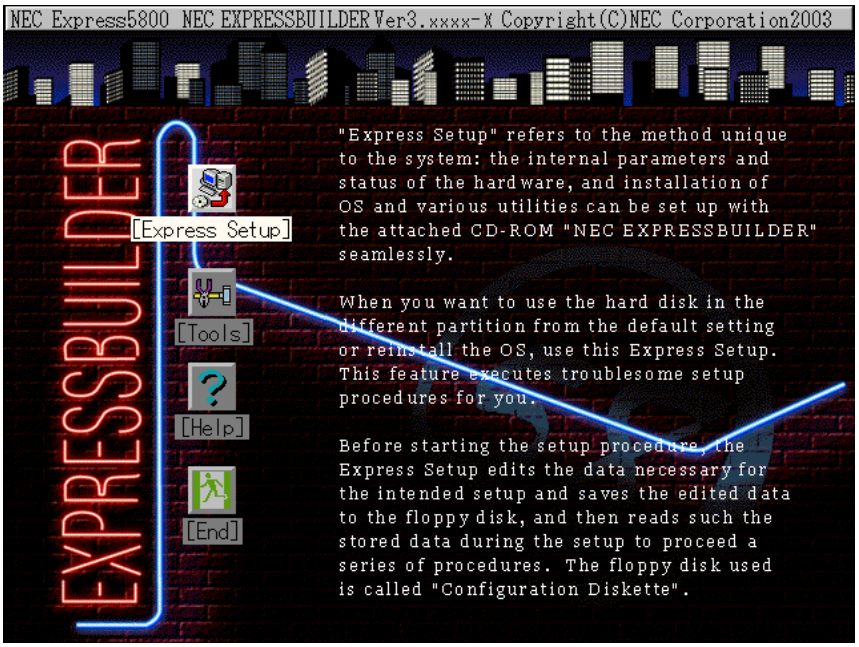
NEC EXPRESSBUILDER is an automated software integration tool to help simplify the process of installing and configuring your server. Shipped with all NEC servers, the NEC EXPRESSBUILDER CD-ROM provides a flexible, guided installation process for system administrators to install Microsoft Windows Server 2003, Microsoft Windows 2000 Server or other operating systems (contact your service representative for the server certified operating systems).

NOTE: Before using NEC EXPRESSBUILDER for initial setup, complete the hardware configuration.

NEC EXPRESSBUILDER includes three distinct programs. Two can be booted under DOS for initial setup, and one is for use under Windows operating system.

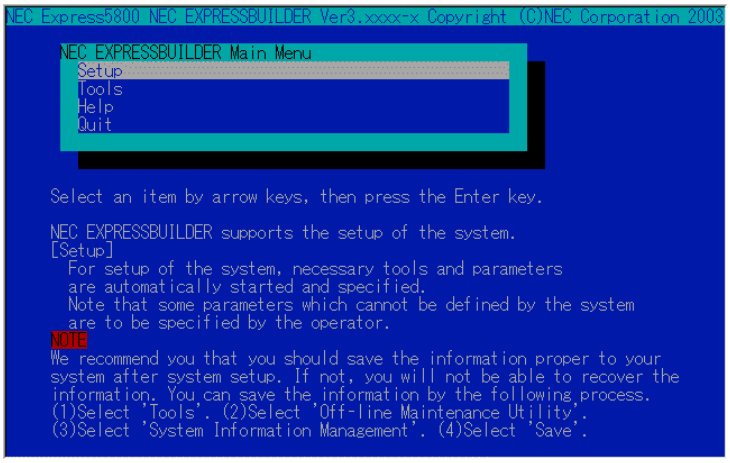
- DOS-based with local console

 Used to set up the server at the first time. This program is also used to diagnose the server and to install/uninstall the management utilities on the maintenance partition of the system drive.



- DOS-based with remote console

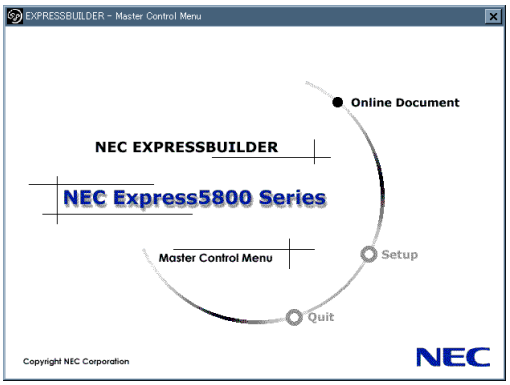
 Used to set up the server from the management workstation by accessing the server over the network or via COM B (serial) port.



NOTE: No keyboard connected to the server is permitted to run this program.

- Windows-based

 This program is called as "Master Control Menu" that can run under the Microsoft Windows system (Windows 95 or later and Windows NT 4.0 or later). You can install the several applications and read the documentation from the menu.



NEC EXPRESSBUILDER for DOS-Based with Local Console

This subsection describes the procedures for using NEC EXPRESSBUILDER for DOS-based with local console.

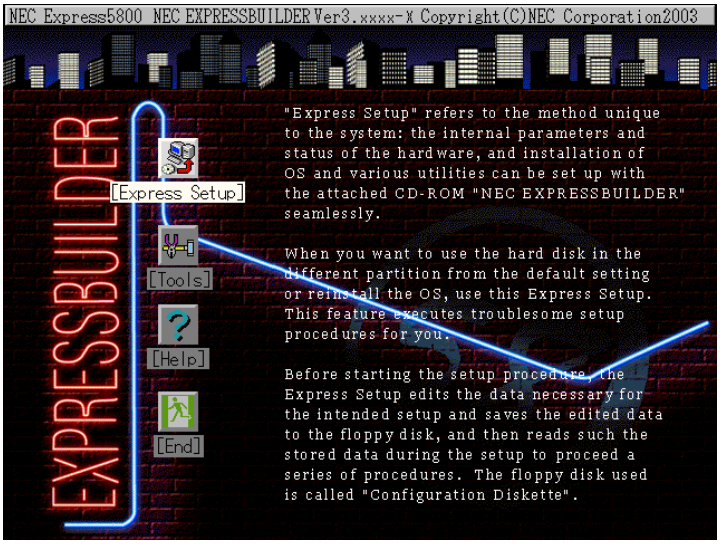
Starting NEC EXPRESSBUILDER

The following procedure instructs you to start NEC EXPRESSBUILDER.

> **IMPORTANT:** Do not remove the NEC EXPRESSBUILDER CD-ROM while NEC EXPRESSBUILDER is running.

1. Turn on peripheral devices and the server in this order.
2. Insert the NEC EXPRESSBUILDER CD-ROM supplied with your server into the CD-ROM drive of your server.
3. Ensure that the floppy disk drive is empty.
4. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

 NEC EXPRESSBUILDER boots up displaying the top menu.



Express Setup

"Express Setup" is intended for initial setup of the server. Its automatic installation mode guides the user easily through the process by detailing specific hardware features and providing screen prompts for software selection and configuration. The program loads the utilities and drivers, applies RAID settings, partitions the disk, and installs the desired operating system.

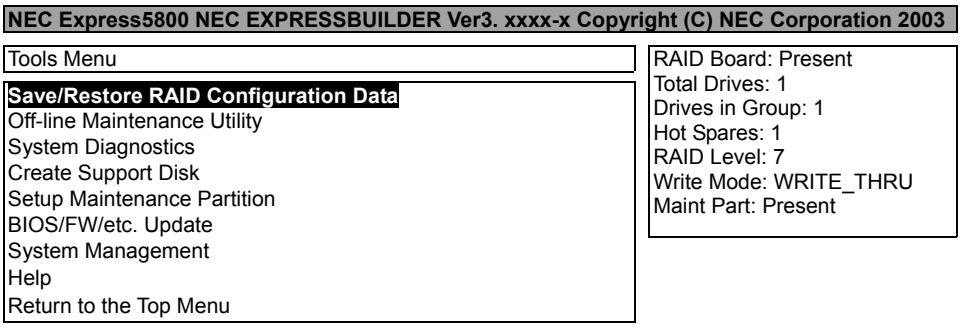
If you install Windows Server 2003, Windows 2000 , after a few tasks are completed, all that remains to be done is to remove the NEC EXPRESSBUILDER CD-ROM and install the Windows CD-ROM, input a product ID number, and acknowledge the license agreement.

IMPORTANT:

- The Express Setup is intended for the initial setup of the server system and, therefore, the Express Setup clears the contents of the hard disk.
- When the setup is started, do not turn off the server until the setup is completed, and also make sure not to remove the "Configuration Diskette" from the floppy disk drive until the message that allow you to remove it appeared.

Tools

"Tools" is also intended for initial setup of the server. It provides more installation options than Express Setup and permits the user to quickly create utility support disks, run the Off-line Maintenance Utility and system diagnostic utility, set up a maintenance partition, and update the various BIOS programs.



- Save/Restore RAID Configuration Data

 The item allows the configuration information on the disk array system to be saved or restored from the floppy disk.

 – Save Disk Array Configuration Data

 The configuration information on the disk array controller is saved into the floppydisk. If you set or change RAID, always use this function to save the configuration information into a floppy disk.

 – Restore Disk Array Configuration Data

 The configuration information saved in a floppy disk is restored to NVRAM and hard disk on the disk array controller.

 If the configuration information is broken or changed by mistake, restore the configuration information.

 When the defected disk array controller is replaced, the configuration information on the hard disk must be saved into the disk array controller.

 However, if the configuration information on the new disk array controller is saved into a hard disk, use this function to restore the configuration information.

 IMPORTANT: Some Disk Array Controllers do not support this function. In that case, this menu will not be shown.

- Off-line Maintenance Utility

 Off-line Maintenance Utility is an OS-independent maintenance program that performs preventive maintenance and error analysis for your server. See Chapter 8 or online help for details.

- System Diagnostics

 Executes various tests on the server system to check if the server functions are normal and if the connection between the server and additional board is normal.

 After the System Diagnostics is executed, a system check program assigned to each model starts. See Chapter 7 for details.

- Create Support Disk

 NEC EXPRESSBUILDER CD-ROM contains a number of device drivers and utilities that you can put on floppy disks and load onto your system.

 Using this menu creates a support disk by copying from the NEC EXPRESSBUILDER CD-ROM. If your system has the Windows operating system, you may find it more convenient to use NEC EXPRESSBUILDER for Windows-based to make support disks

 Write the displayed title on the floppy disk label, which is useful for management in the future. Customers are to provide a floppy disk to create a support disk.

 – Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER

 Creates a support disk for installing Windows Server 2003 Standard Edition and Windows Server 2003 Enterprise Edition. (No need to create this disk when installing the operating system with the Express Setup.)

 – Windows 2000 OEM-DISK for NEC EXPRESSBUILDER

 Creates a support disk for installing Windows 2000 Server and Windows 2000 Advanced Server. (This disk is utilized for Windows 2000 clean installation and for Recovery for Windows 2000 system.) (No need to create this disk when installing the operating system with the Express Setup.)

 – ROM-DOS Startup FD

 Creates a support disk for starting the ROM-DOS system.

 – Off-line Maintenance Utility Bootable FD

 Creates a support disk for activating the Off-line Maintenance Utility.

 – System Management FD

 Creates a support disk for activating the System Management.

- Setup Maintenance Partition

 Maintenance partition is a specific partition for the server and created on your system disk. About 55MB of the maintenance partition includes the various maintenance utilities and executable commands.

 In this menu, you can create the maintenance partition, install the various utilities, and update the utilities. The maintenance utilities installed in the maintenance partition are system diagnostics, System Management, and Off-line Maintenance Utility.

 IMPORTANT:

 - Do not reset or turn off the server while the running this menu. If the processing is discontinued, the system becomes unable to start.
 - The existence of the maintenance partition may be identified from the operating system. In order to retain the Configuration Data, do not delete the partition.

 NOTES:

 - The maintenance partition, once created, will not be recreated again.
 - When the maintenance partition does not exist, some menu items do not appear.

 – Create Maintenance Partition

 NEC EXPRESSBUILDER creates about 55MB of the maintenance partition on the system disk (or disk array system) as work area. The various utilities are installed when the maintenance partition is created successfully or when the maintenance partition is already created.

 – Install Maintenance Partition Utilities

 Various utilities are installed in the maintenance partition from the CD-ROM.

 – Maintenance Partition Update

 Various utilities are copied in the Maintenance Partition from the update disk. This menu is only used when the update disk is supplied from your service representative or attached with your system.

 – FDISK

 Execute FDISK command of ROM-DOS system. You can create/delete partitions, etc.

- BIOS/FW/etc. Update

 This menu allows you to update the software module such as BIOS and firmware of the server by using the update disk (3.5-inch floppy disk) that is distributed from NEC customer service representative.

 After rebooting the system, an update program is started automatically from the floppy disk, and the various BIOS and firmware programs are updated.

 IMPORTANT: Do not turn off the server while the update program is running. If the update processing is discontinued, the system becomes unable to start.

- System Management

 The parameters of BMC (Baseboard Management Controller) are set for remote control and alert.

- Help

 Displays explanations about various functions of NEC EXPRESSBUILDER.

- Return to the Top Menu

 Choosing this menu returns to the Top Menu.

NEC EXPRESSBUILDER for DOS-based with Remote Console

This subsection describes the procedures for using NEC EXPRESSBUILDER for DOS-based with remote console.

NEC EXPRESSBUILDER contains the remote console feature that allows the system administrator to set up the server from the management workstation (management PC) via the network or the server's COM2 (serial) port.

IMPORTANT:

- Do not use this feature on any other computer than the server, or on any other server obtained without the NEC EXPRESSBUILDER. Doing so may cause a failure of the server.
- When a keyboard is connected to the server, the remote console feature is disabled. The NEC EXPRESSBUILDER determines that the server has a console. (Nothing is displayed on the management PC.)

Starting

The following two methods are available to start the server.

- Running NEC EXPRESSBUILDER from the management PC via LAN
- Running NEC EXPRESSBUILDER from the management PC via direct connection (COM2)

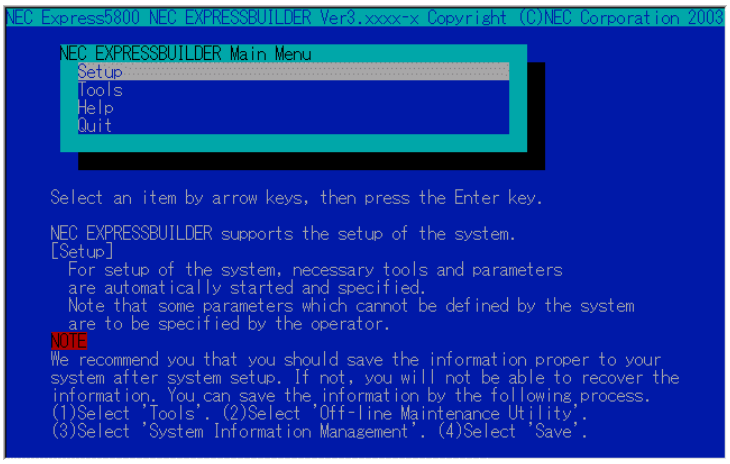
For the procedure for starting NEC EXPRESSBUILDER for DOS-based with Remote Console, refer to Chapter 6 [MWA] – [Remote Management Configuration for the Server without console].

IMPORTANT: Do not change the boot device order in BOOT menu in BIOS SETUP. NEC EXPRESSBUILDER cannot be used if the CD-ROM drive is not the first device to launch the system.
To use this feature, you need 3.5-inch floppy disk. Please prepare the floppy disk.

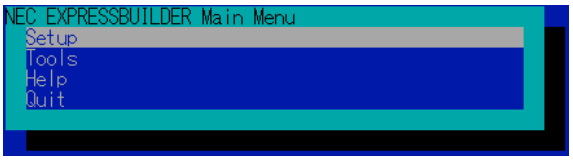
NOTE: The following items of BIOS setup information will be set as shown below.

- LAN Controller 1 (10/100): [Enabled]
- Serial Port A: [Enabled]
 Base I/O address: [3F8]
 Interrupt: [IRQ 4]
- Serial Port B: [Enabled]
 Base I/O address: [2F8]
 Interrupt: [IRQ 3]
- Serial Port Address: [On-board COM B]
- Baud Rate: [19.2k]
- Flow Control: [CTS/RTS]
- Console Type: [PC ANSI]

Main Menu



Shown below are the main menu items.



- Setup
 Automatically sets up the server.
- Tools
 Launch the features of NEC EXPRESSBUILDER individually.
- Help
 Help message on NEC EXPRESSBUILDER.
- Quit
 Quit NEC EXPRESSBUILDER.

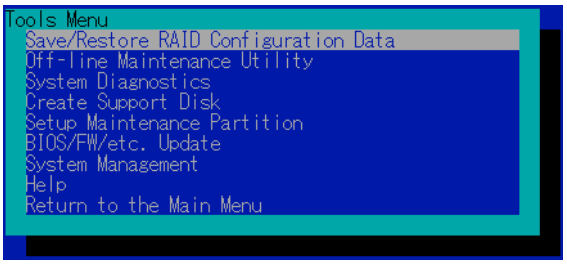
Setup

The NEC EXPRESSBUILDER checks the hardware configuration of the server. The disk array and maintenance partition are automatically configured.



Tools

When you select the [Tools] on the Main Menu, the following screen appears.



The menu items available only in remote console operation among those described in section "NEC EXPRESSBUILDER for DOS-Based with Local Console" are displayed. See the previous subsection for detailed explanation of menu items.

IMPORTANT: The followings are varied from the [Tools] menu in the local console mode.

- Test items and operation method of System Diagnostics. See Chapter 7 for details.
- Type of disks to be created in [Create Support Disk]

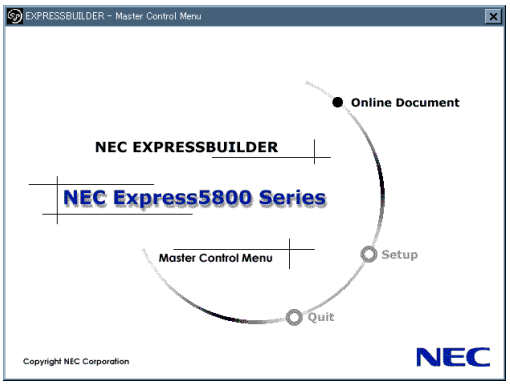
NEC EXPRESSBUILDER for Windows-Based (Master Control Menu)

The Master Control Menu is used to,

- Read documentation,
- Install the management software, and
- Install the viewer application (Adobe Acrobat Reader).

NOTES:

- Master Control Menu requires Microsoft Windows 95 (or later) or Windows NT 4.0 (or later).
- To read documentation (HTML and PDF files) in the NEC EXPRESSBUILDER CD-ROM, the HTML browser (Microsoft Internet Explorer Version 5.0 (or later) or Netscape Communicator Version 4.0 (or later)), and Adobe Acrobat Reader Version 4.05 (or later) must be required in your system.



Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive.

Master Control Menu appears on the screen automatically. If the CD-ROM Autorun function is invalid in your system, run the \MC\1ST.EXE file in the CD-ROM directly.

Some items are grayed out when the logon user does not have the authority of the administrator or the system is not proper for the installation of the applications.

To use Master Control Menu,

- Click on [Online Document],[Setup] or [Quit], or
- Click the right mouse button on the Master Control Menu window.

CONFIGURATION DISKETTE CREATOR

"Configuration Diskette Creator" is a tool to create [Configuration Diskette] that is used for configuring the server with the Express Setup (see Chapter 5 for details).

If you use the Configuration Diskette created by the Express Setup and Configuration Diskette Creator to operate the setup, you can setup from the installation of OS to several utilities automatically except for a few key input to confirm the specification. Also, you can install the system with the same specification as before when re-installing the system. We recommend you to create [Configuration Diskette] to setup the servers from NEC EXPRESSBUILDER.

> **NOTE:** You can install Windows 2000/Windows Server 2003 without [Configuration Diskette]. Also, you can modify/newly create [Configuration Diskette] during the setup with NEC EXPRESSBUILDER.

Installing Configuration Diskette Creator

This section describes about installing Configuration Diskette Creator on the computer that is running with Windows XP/2000, Windows Server 2003, Windows NT 3.51, and Windows 95/98/Me to create Configuration Diskette.

> **NOTE:** Configuration Diskette Creator works on PC-AT compatible computers.

Windows XP/2000 / Windows Server 2003 / Windows NT 4.0 / Windows 95/98/Me

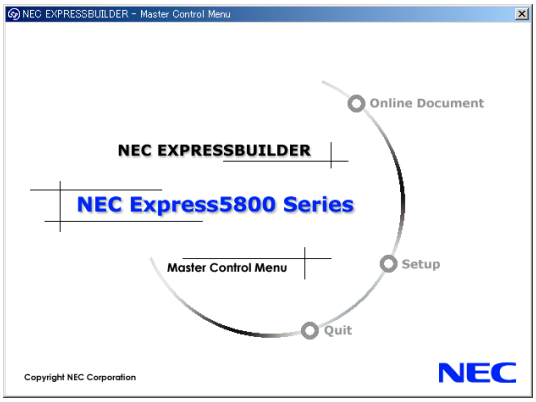
Follow the procedure below to install Configuration Diskette Creator on the computer that is running with Windows XP/2000, Windows Server 2003, Windows NT 4.0, Windows 95/98/Me.

> **NOTE:** The instructions displayed on the screen may differ according to the model you are using, but setup can be operated with the same procedure.

1. Start the OS.
2. Insert the attached NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive.

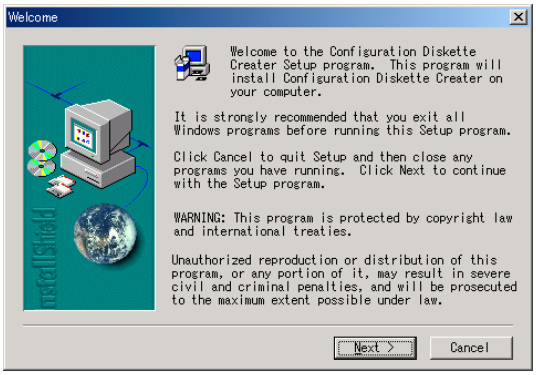
 Master Control Menu will appear.

3. Right-click on the screen or left-click [Software Setup]. The menu will appear.

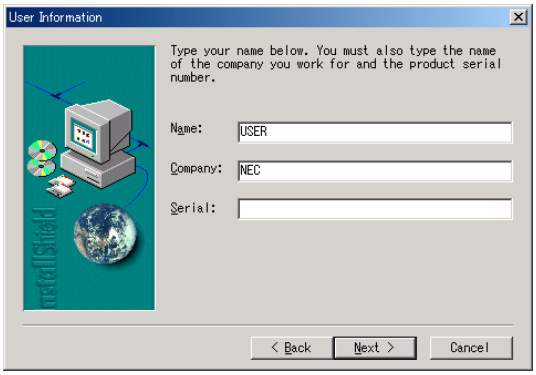


4. Click [Configuration Diskette Creator]. Setup Wizard will start.

Follow the message to continue the installation.



NOTE: It is not necessary to input [Serial Number] on [User Information] dialog box.



After completing the Configuration Diskette Creator installation, proceed to [Creating Configuration Diskette].

Creating Configuration Diskette

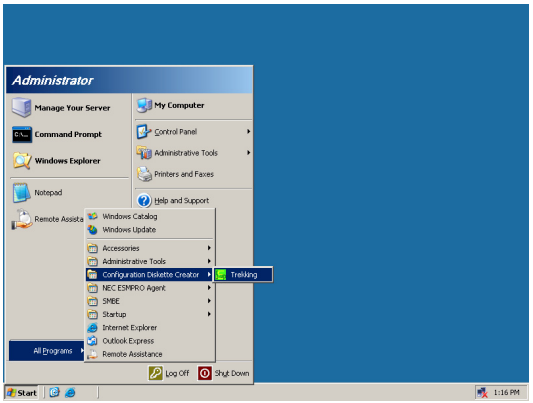
This section describes about specifying setup information that is necessary for OS installation and creating [Configuration Diskette]. Follow the procedure below.

> **NOTE:** In the procedure below, the folder name that is specified when installing Trekking command is assumed as [Configuration Diskette Creator].

1. Display Configuration Diskette Creator window.

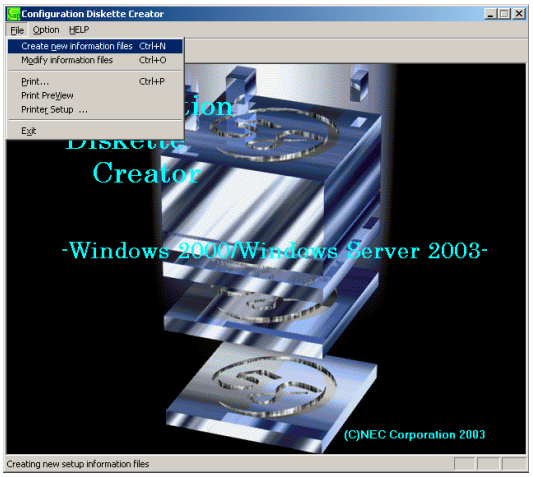
<On Windows XP/2000 / Windows Server 2003 / Windows 95/98/Me>

From the Start pop-up menu, click [Program] → [Configuration Diskette Creator] and select [Trekking].



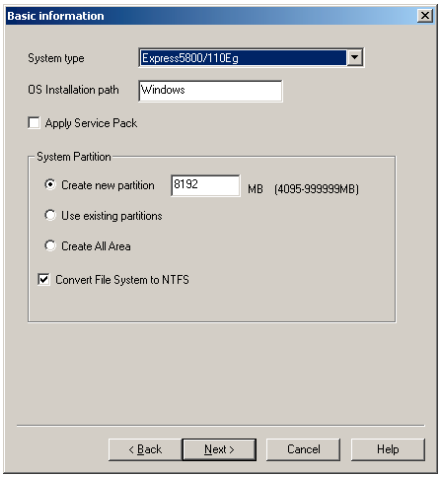
2. Click [Create new information files] from the [File] menu.

The [Disk Environment] dialog box will be displayed.



3. Specify each item and click on [OK].

The dialog boxes to specify setup information will be displayed in order, such as [Basic Information] dialog box.

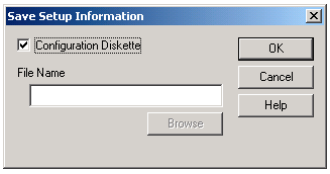


4. Follow the message to specify each item on the dialog box and click on [Next].

NOTE: If you click on [Cancel], all the input value will be deleted.

When completing the specification of setup information, the [Save Setup Information] dialog box will appear.

5. Confirm that the [Configuration Diskette] check box is checked, and input file name for Setup File in [File Name].



6. Insert the floppy disk formatted by 1.44MB into the floppy disk drive and click on [OK].

Now [Configuration Diskette] has been created. [Configuration Diskette] is used when you install Windows 2000/Windows Server 2003. Put a label and keep it where it will not be lost.

NOTE: For the information on the contents of each specifying item, refer to the Help.

If you want to modify the information file that already exists, click [Modify information Files] on Configuration Diskette Creator window. Refer to the Help to modify the inf file.

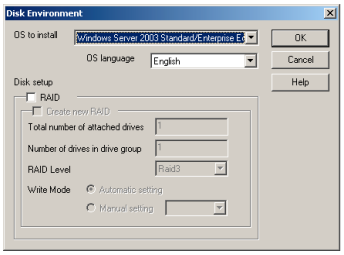
Installing Optional Mass Storage Driver

To install optional Mass Storage Driver that is supported by the Express Setup, follow the procedure below to create [Configuration Diskette].

1. Display Configuration Diskette Creator window.
2. From the [File] menu, click [Create new information files].

 [Disk Environment] dialog box will be displayed.
3. Specify each item and click on [OK].

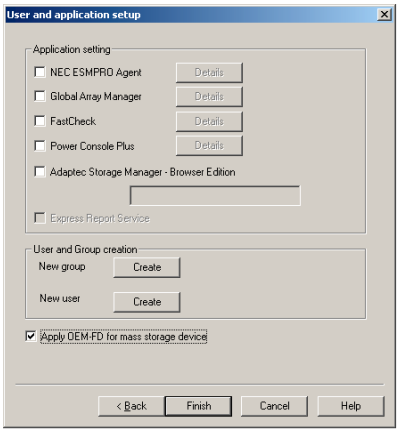
 The dialog boxes to specify setup information will be displayed in order, such as [Disk Environment] dialog box.



4. Follow the message to specify each item on the dialog box and click on [Next].

NOTE: If you click on [Cancel], all the input value will be deleted.

5. When [User and application setup] is displayed, check [Apply OEM-FD for mass storage device].



6. When the [Save Setup Information] dialog box is displayed, confirm that the [Configuration Diskette] check box is checked, and input file name for the Setup File in [File Name].
7. Insert the floppy disk formatted by 1.44MB into the floppy disk drive and click on [OK].

NEC ESMPRO

The NEC ESMPRO (referred to as ESMPRO hereafter) lets a system administrator manage remote servers across a network. ESMPRO monitors server hardware and software configurations, failures, and performance. With log data collected by ESMPRO, a system administrator can track long-term and short-term performance, monitor server usage, create graphs to record trends, and check server failure rates. The administrator can use the information collected to create more efficient data routing procedures and optimize server usage.

Functions and Features

The ESMPRO offers many functions and features for managing remote servers across a network. These features help the system administrator perform daily system operation, system extension, and transfer tasks. Some features of ESMPRO Manager include:

- Hardware and software server configuration
 - Hardware resources mounted in servers, such as the CPU, memory, disks, disk arrays, and LAN boards.
 - Software resources, such as operating system information and drivers running on each server.
- Server failures
 - On-screen real-time displays provide the system administrator with the failure type, location, cause, and suggested corrective action.
 - Failure data includes hardware failure information such as system board temperature, memory failure, crashes, and software failure information.
- Performance
 - ESMPRO monitors server performance and displays server usage on the screen and displays information, such as the rate of CPU load, memory usage, disk usage, and LAN traffic. Usage threshold values can help the system administrator monitor and prevent server overloads.

For installation procedure and detailed explanations on NEC ESMPRO, refer to the online document in the NEC EXPRESSBUILDER CD-ROM.

NEC MWA

NEC MWA is an application that enables the remote management of the server through a management PC over the network. (A management PC is a computer running NEC ESMPRO Manager.)

Refer to "MWA First Step Guide" in the following directory of NEC EXPRESSBUILDER CD-ROM for details of its functions and operation.

CD-ROM drive: \mwa\doc\en\mwa_fsg.pdf

NOTE: How to install MWA is described in online documents. See "MWA Installation Guide" for details.

Servers to be Remotely Managed by MWA

The server with RomPilot or BMC can be managed by MWA.

This product has BMC (IPMI1.5).

Precautions

"MWA First Step Guide" is common to all the managed servers.

The followings are notes and restrictions for this product.

* The serial port B or LAN 1 port is used to communicate the Base Management Controller (BMC) in the server with the management PC.

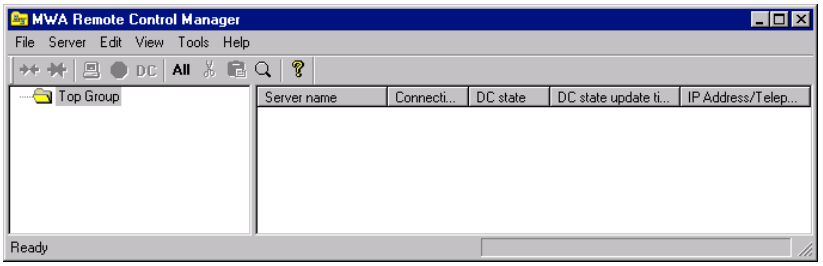
Remote Management Configuration for the Server without Console

This subsection describes the procedures for using BIOS SETUP utilities and DOS-based tool on the server with remote console in case that the server is not connected the console like as keyboad. The following two methods are available.

- Through the management PC via LAN
- Through the management PC with direct connection

Through the management PC via LAN

1. Click [Program] - [NEC MWA] - [MWA] from the start menu on the management PC installed NEC MWA.MWA will start and open [Remote Control Manager].



2. Insert a formatted floppy disk of 1.44 MB into the floppy disk drive of the management PC.
3. Select [Configuration] from the [File] menu of [MWA Remote Control Manager] to display the [Configuration] dialog box.
4. Select [New] to display the [Select a model] dialog box.
5. Check [Write data to FD] and select the model name to display the Configuration dialog box for the server.
6. Set and register the configuration information on the [Configuration for BMC] dialog box and then write the configuration information into the floppy disk with the following file name:

 <Configuration Information File name>

 CSL_LESS.cfg

 The setting items of the server are as follows:

 Computer Name (The managed server name. Arbitrary.)
 IP Address
 Subnet Mask
 Default Gateway
 Primary Alert Receiver (IP address of management PC)

7. Select the [Properties] command from the popup menu displayed by clicking the right mouse button on the server name to display the [Properties] dialog box.

8. If the [Properties] dialog box appears, provide the following setting:

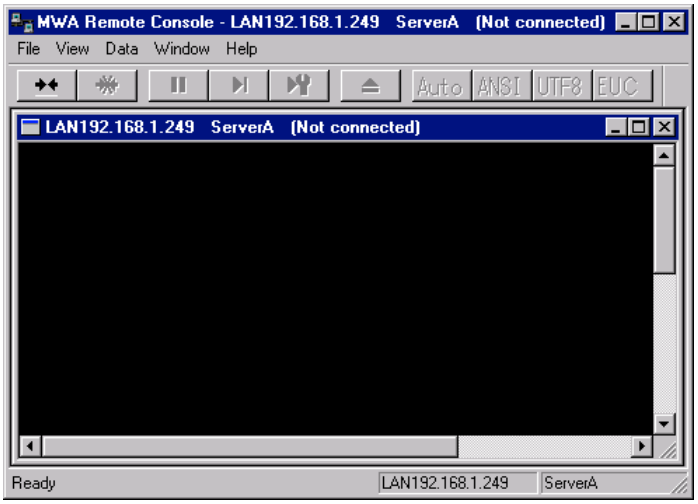
 <[ID] page>

 Connection Type: LAN

 <[Alert Notifications] page>

 Remove the check of [Use Default Settings] and check the [RESET] of [Activate].

9. Select the [Open Remote Console] command from the popup menu displayed by clicking the right mouse button on the server name to start the [MWA Remote Console].



10. Select the [Action at Remote Console Connect] command from the popup menu displayed by clicking the right mouse button on the server window to display the [Action at RomPilot Connect] dialog box. Then select [Go MWA mode].

11. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.

 Insert the floppy disk storing the configuration information file into the floppy disk drive.

12. Turn off the power of the server and then on again to restart the system. After a single reboot, MWA Remote Console displays the main menu of NEC EXPRESSBUILDER and you can operate tools on the server through the management PC.

> **NOTE:** The main menu appears without rebooting it when the setting in the configuration information file is already established.

13. When the main menu appears on the screen of the management PC, remove the floppy disk from the floppy disk drive.

14. Select the [Properties] command from the popup menu displayed by clicking the right mouse button on the server name to display the [Properties] dialog box.

Execute [Connection Check] on the [ID] tab page.

15. When you want to operate other tools, remove the NEC EXPRESSBUILDER CD-ROM from the CD-ROM drive and turn off and on the server from MWA Remote Control Manager to start other tools.

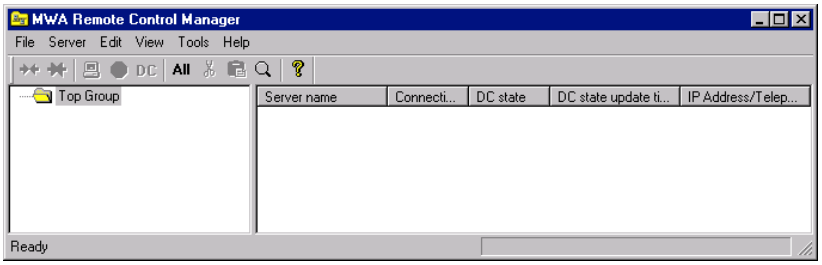
Select [Power control] command from the popup menu displayed by clicking the right mouse button on the server name. You can turn off/on the server.

> **IMPORTANT:** When the Operation with remote console is end, remove the check of [RESET] of [Activate] in thr [Properties] dialog box and reboot the server.

Through the management PC with direct connection

1. Click [Program] - [NEC MWA] - [MWA] from the start menu on the management PC installed NEC MWA.

 MWA will start and open [Remote Control Manager].



2. Select [Environment] - [Direct Connection Setting] from the [File] menu of [MWA Remote Control Manager] to display the [Direct Connection] dialog box. Then provide the following setting:

 <Direct Connection>

 Port No.: COM port on the management PC to be connected

 Baud Rate: 19200

 Flow Control: RTS/CTS

3. Select [Configuration] from the [File] menu of [MWA Remote Control Manager] to display the [Configuration] dialog box.

4. Select [New] to display the [Select a model] dialog box.

5. Check [Write data to FD]. Then select the model name to display the [Configuration for BMC] dialog box for the server.

6. Set and register the configuration information including the computer name on the [Configuration for BMC] dialog box and then write the information into the floppy disk with the following file name:

 <Configuration Information File name>

 CSL_LESS.cfg

7. Select the [Properties] command from the popup menu displayed by clicking the right mouse button on the server name to display the [Properties] dialog box.

8. If the [Properties] dialog box appears, provide the following setting:

 <[ID] page>

 Connection Type: COM

 COM: Direct (Cross cable)

9. Select the [Open Remote Console] command from the popup menu displayed by clicking the right mouse button on the server name to start the [MWA Remote Console]. Then click on the [Connect] button on the MWA Remote Console.

10. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.

 Insert the floppy disk storing the configuration information file into the floppy disk drive.

11. Turn off the power of the server and then on again to restart the system.

 After a single reboot, MWA Remote Console displays the main menu of NEC EXPRESSBUILDER and you can operate tools on the server through the management PC.

 NOTE: The main menu appears without rebooting it when the setting in the configuration information file is already established.

12. When you want to operate other tools, remove the NEC EXPRESSBUILDER CD-ROM from the CD-ROM drive and Turn off and on the server to start other tools.

 IMPORTANT: When the Operation with remote console is end, click the [Disconnect] on MWA Remote Console.

Power Console Plus

Power Console Plus is a utility to control the RAID system of the disk array controller (MegaRAID controller) produced by LSI Logic. Use of Power Console Plus enables operations (e.g., monitoring and maintenance) of RAID systems that are constructed on local NEC Express servers and NEC Express servers connected through networks (TCP/IP). The operations can be done online on graphical screens without the system being stopped.

Major Functions

Power Console Plus has the following features:

- Supporting the Wizard function to facilitate configuration
- Enabling the change of RAID levels
- Being compatible with SAF-TE
- Supporting the performance monitor
- Supporting enclosure functions such as temperature monitoring, power monitoring, and fan monitoring
- Enabling the settings of Write, Read, and Cache policies for each logical drive
- Supporting the save and restore functions for configuration
- Enabling the display of the SCSI transfer rate

Components

Power Console Plus consists of the following five components:

- SNMP Agent

 This function is not yet supported. Do not install SNMP Agent.

- MegaRAID Service Monitor

 Enables NEC ESMPRO to monitor the MegaRAID controller by registering event logs. Install MegaRAID Service Monitor in the NEC Express server in which the MegaRAID controller is mounted.

- MegaRAID Client

 Controls the RAID system on graphical screens. Install MegaRAID Client in the NEC Express server in which the MegaRAID controller mounted or in the management PC that is connected through the NEC Express server and network.

- MegaRAID Server

 Enables control of the MegaRAID controller via the network. Install MegaRAID Server in the NEC Express server in which the MegaRAID controller mounted.

- MegaRAID Registration Server

 Enables control of the MegaRAID controller via the network. Install in one of NEC Express servers and management PCs that are connected through network. The above components must be installed correctly for establishing the environment to use Power Console Plus.

Power Console Plus components to be installed are different between the target servers and management PC.

- Server:
 NEC Express server in which the MegaRAID controller is mounted

 Install the following three components in this server:

 – MegaRAID Service Monitor

 – MegaRAID Server

 – MegaRAID Client

- Management PC:
 Management PC that monitors and controls servers via the network (TCP/IP)

 When managing array on Terminal Server working on Windows NT Server Version 4.0 Terminal Server Edition, prepare PC, and install Management PC component. Management PC does not guarantee operation on Client, which used Terminal Server, Terminal Server Emulator, WBT.

 Start Power Console Plus of management PC, after the Power On machine that installed "Server" and "Management Server".

 Install the following component in this PC:

 – MegaRAID Client

- Management server:
 Machine that manages all servers that are monitored and controlled by management PCs

 Install the following component in one of the servers or management PCs:

 – MegaRAID Registration Server

Server Setup

This section explains Power Console Plus setup in the NEC Express server in which the MegaRAID controller is mounted.

Operating Environment

This section explains the operating environment required for Power Console Plus to operate on a server.

- Hardware
 - Machine:

 NEC Express5800 series connected with the MegaRAID controller array controller
 - Memory:

 Size large enough for OS operation + 8MB or more
 - Free space of the hard disk:

 5MB or more
 - Display unit:

 Screen size 1024 × 768 or larger
 - Required peripheral equipment:

 Network Interface card

 CD-ROM unit

 Pointing device such as a mouse

Management PC Setup

This section explains Power Console Plus setup in a computer that manages servers via the network (TCP/IP).

Operating Environment

This section explains the operating environment required for Power Console Plus to operate on a management PC.

- Hardware
 - Machine:

 NEC Express5800 series

 PC/AT-compatible machine (which contains Intel Pentium or a CPU at least equivalent to it)
 - Memory:

 Size large enough for OS operation + 8MB or more
 - Free space of the hard disk:

 5 MB or more
 - Display unit:

 Screen size 1024 × 768 or larger
 - Required peripheral equipment:

 Network Interface card

 CD-ROM unit

 Pointing device such as a mouse

Chapter 7

Maintenance

This chapter describes the daily maintenance of the server and precautions when relocating or storing the server.

MAKING BACKUP COPIES

It is recommended that you make backup copies of your valuable data stored in hard disks of the server on a regular basis. For backup storage devices suitable for the server and backup tools, consult with your service representative.

When you have changed the hardware configuration or BIOS configuration, select "System Information Management" and then "Save" of the Off-line Maintenance Utility to make a backup copy of the system information.

Also make a backup copy of the disk array configuration data if your system is in the array configuration. When your hard disks have been auto-rebuilt due to a failure, it is recommended to make a backup copy of the configuration data. To make a backup copy of the configuration data, use the configuration utility that is resident in the FLASH memory on the optional disk array controller board. Refer to the manual supplied with the board.

CLEANING

Clean the server on a regular basis to keep the serer in a good shape.

⚠ WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not disassemble, repair, or alter the server.
- Do not look into the CD-ROM drive.
- Do not remove the lithium battery.
- Disconnect the power plug before cleaning with the server.

⚠ CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- High temperature
- Make sure to complete board installation.

Cleaning the Server

For daily cleaning, wipe the external surfaces of the server with a dry soft cloth. Follow the procedure below if stains remain on the surfaces:

IMPORTANT:

- To avoid altering the material and color of the server, do not use volatile solvents such as thinner and benzene to clean the server.
- The power receptacle, the cables, the connectors on the rear panel of server, and the inside of the server must be kept dry. Do not moisten them with water.

1. Make sure that the server is off-powered (the POWER/SLEEP lamp goes off).
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
5. Rub off stains on the server with the cloth prepared in Step 4.
6. Soak a soft cloth in water, squeeze it firmly, wipe the server with it once again.
7. Wipe the server with a dry cloth.
8. Wipe off dust from the fan exhaust opening on the rear of the server with a dry cloth.

Cleaning the Interior

One of the most important items in a good maintenance program is regular and thorough cleaning of the interior of the server, especially around the baseboard.

Dust buildup inside the server can lead to several problems. As dust acts as a thermal insulator, a buildup can prevent proper system cooling. Excessive heat will shorten the life of server components. Also, dust may contain conductive or corrosive materials that can cause short circuits or corrosion of electrical contacts.

How often you should clean the interior of the server depends on the environment in which it is located. For most office environments, you probably should clean the server every 12 months. For more severe environments, clean the interior every 6 months.

Cleaning the interior of the server entails powering off the server and removing the left side cover. You will need a small vacuum cleaner (with plastic tipped nozzle and electrostatic protection), computer grade canned air, and a small brush for cleaning the interior.

Follow the procedure below to clean the interior of the server.

⚠ WARNING



Unplug all power cords.

Unplug all power cords before performing any maintenance. Voltage is present inside the server and display unit even after the power is turned off. All voltage is removed only when the power cord is unplugged.

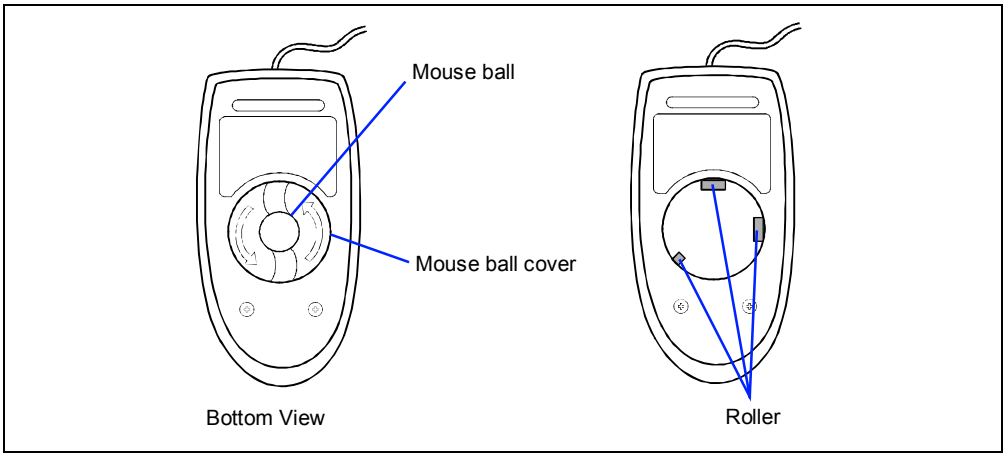
1. Turn off the server and unplug all power cables.
2. Remove the top cover. (See Chapter 9.)
3. Use a small brush to loosen any dust and debris on the baseboard.
4. Use computer grade canned air to blow dust off components on the baseboard.
5. Use a small vacuum cleaner with plastic tip to vacuum out dust and debris from the interior of the server.
6. Reinstall the top cover. (See Chapter 9.)
7. Reconnect all power cables and turn on the server.

Cleaning the Keyboard/Mouse

Make sure that the server and peripheral devices are all off-powered (the POWER lamp goes off), and then wipe the keyboard surface with a dry cloth.

The mouse operation depends on the degree of smoothness of the internal ball rotation. To keep the mouse ball clean, use the mouse in a place with little dust. Follow the steps below to clean the mouse regularly:

1. Prepare cold or lukewarm water, neutral detergent, alcohol, two dry soft clothes, and cotton swabs.
2. Make sure that the server is off-powered (the POWER/SLEEP lamp goes off).
3. Turn the mouse upside down, and rotate the mouse ball cover counterclockwise to remove it.
4. Take out the ball from the mouse. Cover the bottom of the mouse with your hand, and turn your hand holding the mouse (the mouse is on your palm with the button upward). The mouse ball is released onto your palm.



5. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
6. Rub off stains on the mouse ball. Softly wipe the mouse ball with the cloth prepared in Step 5.
7. Wipe the mouse ball with a dry soft cloth.
8. Wipe three small rollers inside the mouse with a cotton swab soaked with alcohol. Wipe stains slowly and carefully by rotating rollers with the tip of the cotton swab.
9. Blow out any dust from the mouse. Protect your eyes from the dust.
10. Put the mouse ball back into the mouse.
11. Place the mouse ball cover, and rotate it clockwise until it is locked.

Cleaning CD-ROM

A dusty CD-ROM or dust-accumulated tray causes the device to fail to read data correctly.

Follow the procedure below to clean the tray and CD-ROM regularly:

1. Make sure that the server is powered (the POWER/SLEEP lamp is lit).
2. Press the Eject button on the front of the CD-ROM drive.
 The tray comes out.
3. Hold the CD-ROM lightly and take it out from the tray.

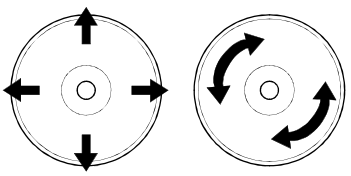
 NOTE: Do not touch the signal side of the CD-ROM with your hand.

4. Wipe the tray with a dry soft cloth.

 IMPORTANT: Do not wipe the lens of the CD-ROM drive. Doing so may damage the lens and may cause a malfunction of the drive.

5. Press the Eject button or gently push on the tray front to close the tray.
6. Wipe the signal side of the CD-ROM with a dry soft cloth.

 IMPORTANT: Wipe CD-ROMs from the center to the outside. Use only CD-ROM cleaner if necessary. Cleaning a CD-ROM with record spray/cleaner, benzene, or thinner causes damage to the CD-ROM contents. At worst, inserting the CD-ROM into the server may cause failure.



SYSTEM DIAGNOSTICS

The System Diagnostics runs several tests on the server.

Use the System Diagnostics program in the NEC EXPRESSBUILDER provided with the server to diagnose the server.

Test Items

The following items are tested in system diagnostics.

- Memory
- CPU cache memory
- Hard disk used as a system

IMPORTANT: When executing the System Diagnostics, make sure to remove the LAN cable. Executing the System Diagnostics with the LAN cable connected, the network may be influenced.

NOTE: On checking the hard disk, no data is written into the disk.

Starting and Ending the System Diagnostics

There are two ways to diagnose the server: to use the local console (keyboard) of the server itself, and to use the management PC via serial port (remote console).

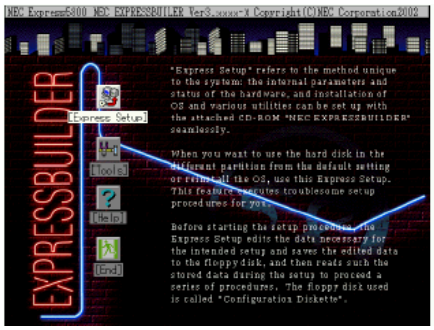
> **IMPORTANT:** Two methods of LAN and the serial port are mentioned in Chapter 6 "NEC EXPRESSBUILDER" in the way of communicating in remote console. Use the serial port to execute System Diagnostics with remote console. The LAN connection is not for System Diagnostics.

Procedures to start the diagnostics program is as follows:

1. Shutdown the OS, and turn off the server. Then, unplug the power cord.
2. Disconnect all the LAN cables from the server.
3. Plug the power cord and turn on the server.
4. Use the NEC EXPRESSBUILDER CD-ROM to reboot the server.

 See Chapter 6 "NEC EXPRESSBUILDER" for details.

 The following menu appears when started the server using the NEC EXPRESSBUILDER.



Local console



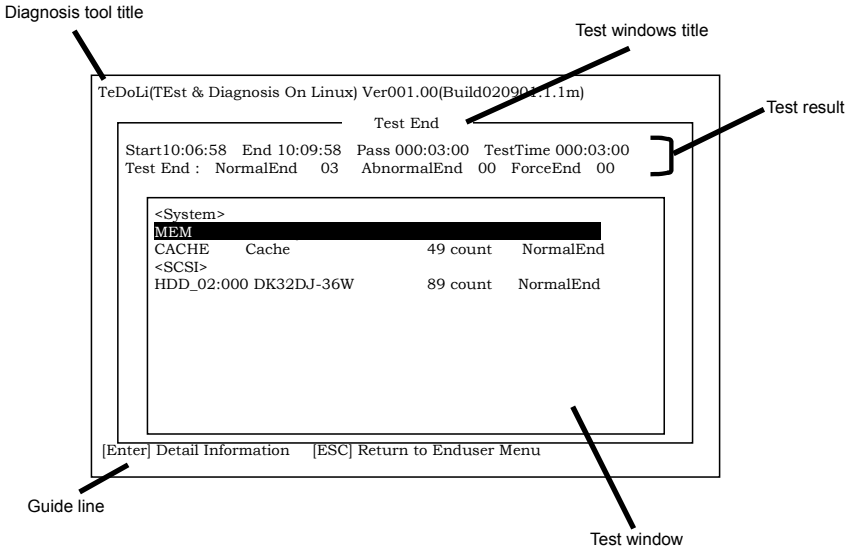
Remote console

5. Select [Tools].

6. Select [System Diagnostics].

The System Diagnostics starts and completes in approximately three minutes.

When the diagnosis completes, the test window title shows "Test End", as the following figure.



Diagnosis tool title: shows a name of this diagnosis and Version information.

Test windows title: shows the progress of diagnosis. When it completes, it shows "Test End"

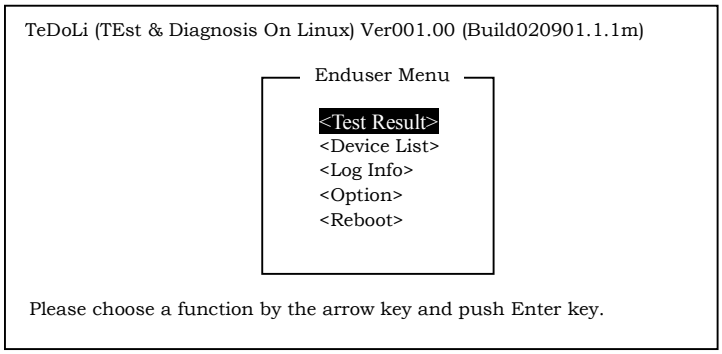
Test Result: shows the information including time of start, end and progress, and result of the diagnosis.

Guide line: shows a description of keys to navigate the window.

Test window: Move the cursor and press **Enter** to view the detail of the diagnosis.

If an error is detected during the System Diagnostics, the test result shows "Abnormal End" in red color. Move the cursor and press Enter on the diagnosis which error occurred. Take a note of the error message showed, and contact your sales agent.

7. Follow the Guide line showed in the bottom of the screen and press **ESC** to show the End user Menu showed below.



<Test Result> shows the screen of the diagnosis completed aforementioned.

<Device List> shows the information of all the devices connected.

<Log Info> shows the log information and error messages of the diagnosis. it can be saved to a floppy disk. To save the log information to a floppy disk, insert a formatted floppy disk to a floppy disk drive and select <Save[F]>.

<Option> change where to output log

<Reboot> Restarts the Express Server.

8. Select <Reboot> in the End user Menu above.

 The Express Server restarts, and NEC EXPRESSBUILDER boot the system.

9. Exit the NEC EXPRESSBUILDER, and remove the CD-ROM from the CD-ROM drive.
10. Turn off the server and unplug the power cord from the receptacle.
11. Reconnect all the LAN cables to the server.
12. Plug the power code.

This completes the System Diagnostics.

RELOCATING/STORING THE SERVER

Follow the procedure below to relocate or store the server:

⚠ CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Never attempt to lift the server only by yourself.
- Do not install the server in any place other than specified.
- Do not connect/disconnect any interface cable with the power cord of the server plugged to a power source.

IMPORTANT:

- If the server needs to be relocated/stored due to a change in the floor layout to a great extent, contact the service representative.
- Make sure to make a backup copy of your valuable data in the hard disk, if any.
- Make sure not to apply a shock to hard disks to relocated the server if the contains any.
- It is recommended that the server and the internal devices should be stored in a place where the room temperature can be maintained. It is important for the server or internal devices to work normally after storage. Store the device in the place where temperature ranges between -10 to 55°C and humidity ranges between 20 to 80%, without dew condensation.
- If you use the server after transported or relocated, check the system timer and adjust it if necessary. If the system timer advances or delays remarkably with the passage of time, contact your service representative to repair it.
 The server or internal option device may be dewed if it is brought to a warm place from a cold place suddenly. Using a server or an internal device with dew attached may cause malfunction or failure. Make sure to adapt them to the operating environment before using them.

1. Take a floppy disk and a CD-ROM out of the server, if any.
2. Power off the server (the POWER lamp goes off).
3. Disengage the power cord from the lock spring.
4. Unplug the power cord of the server from a power outlet.
5. Remove all the cables from the server.
6. Remove the server from the rack cabinet.
 See Chapter 3 for details.
7. Hold the server by its bottom with at least another person to carry the server.
8. Protect the server with the shock-absorbing materials, and pack it securely.

Chapter 8

Troubleshooting

If your server does not operate as expected, read this chapter before assuming a failure.

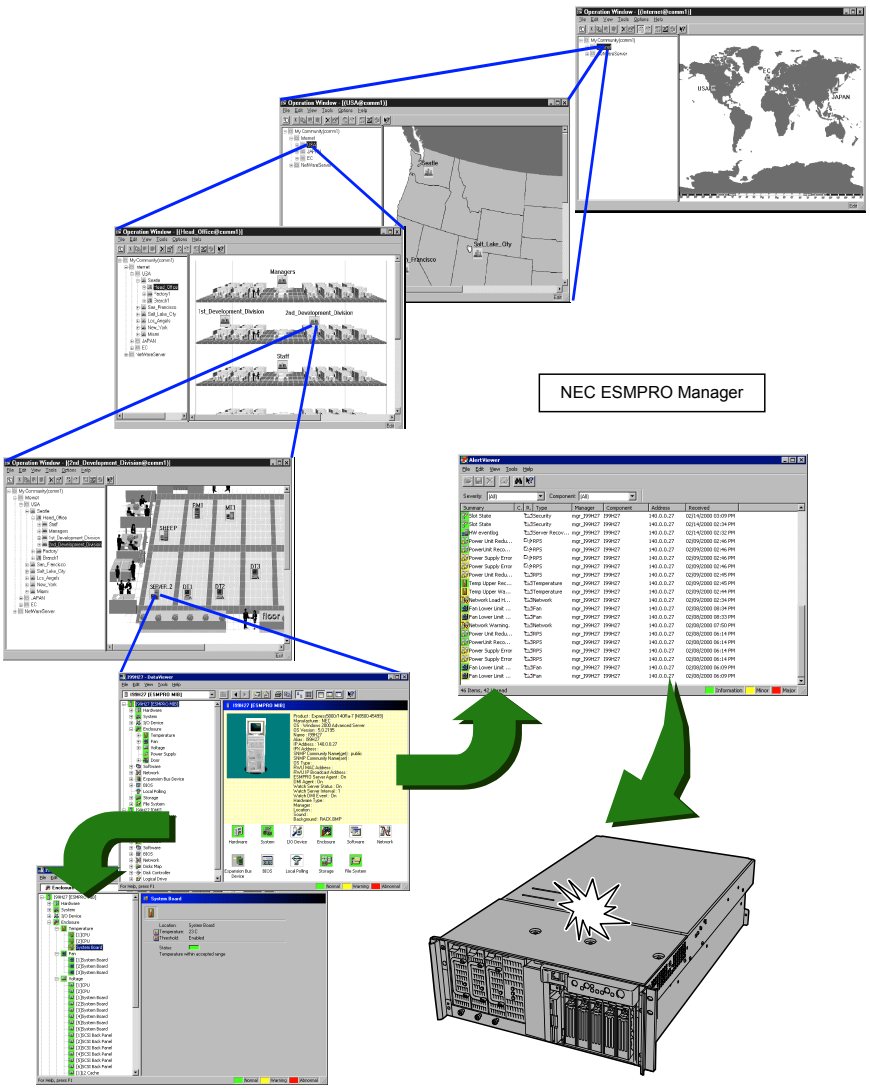
> **NOTE:** For provision against an unexpected failure, it is recommended to install the Off-line Maintenance Utility, NEC ESMPRO, to the server and client computers.

SYSTEM VIEWERS

Monitor the occurrence of fault by NEC ESMPRO during the system operation.

Especially take note on whether any alert is reported to NEC ESMPRO Manager on the language PC. Check whether any alert is reported on the Operation Window, Data Viewer, or Alert Viewer of NEC ESMPRO Manager.

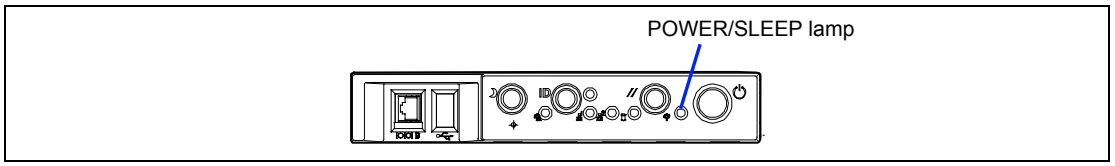
[Example]



LAMPS

The following describes lamps on the server and their indications.

POWER/SLEEP Lamp



The green POWER/SLEEP lamp lights to indicate normal operation while the server is powered. When the server is off-powered, the POWER/SLEEP lamp stays unlit.

The POWER/SLEEP lamp indicates that the server is running in the power-saving mode (sleep mode). If the OS supports the power-saving mode such as Windows 2000, pressing the SLEEP switch blinks the POWER/SLEEP lamp in green and place the server in the power-saving mode. Press the POWER switch to turn out the POWER/SLEEP lamp and place the server back in the normal mode.

The power-saving mode is only available when the OS supports the power-saving feature. Some OS's allow you to set the server to automatically turn in the power-saving mode when no access is made to the server for a certain period of time or to select the power-saving mode with a command.

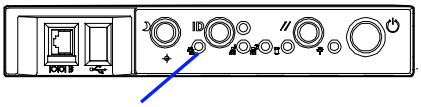
STATUS Lamp

The STATUS lamp stays lit in green when the server is in successful operation. When the STATUS lamp is unlit or lit/flashing in amber, it indicates that the server has failed.

The following table lists indications of the STATUS lamp, descriptions, and actions to take.

NOTES:

- If the server has the NEC ESMPRO or Off-line Maintenance Utility installed, you can view the error log to identify the cause of a trouble.
- To cycle power to the server, shut down the server from the OS and reboot it, if available. If the shutdown from the OS is not available, reset or execute the forced shut down or disconnect and connect the power cord to reboot the server.



STATUS lamp indication	Description	Action
Lit in green	The server is in successful operation.	None
Flashing in green	• The server is in operation with its memory or CPU degraded. • A single-bit error occurred frequently.	Use the BIOS setup utility, SETUP, to identify the degraded device and replace it as soon as possible.
Unlit	The server is off-powered.	Power on the server.
	POST is in progress.	Wait for a while. The STATUS lamp will light in a few seconds after POST completion.
	A CPU error occurred.	Cycle power to the server. If POST displays an error message, take a note on the message and contact your service representative.
	A CPU thermal error was detected. (Thermal-Trip)	
	A watchdog timer has timed out.	
	An uncorrectable memory error was detected.	
	A PCI system error occurred.	
	A PCI parity error occurred.	
	A CPU bus error occurred.	
	Memory dumping is requested.	Wait until memory dumping completes.

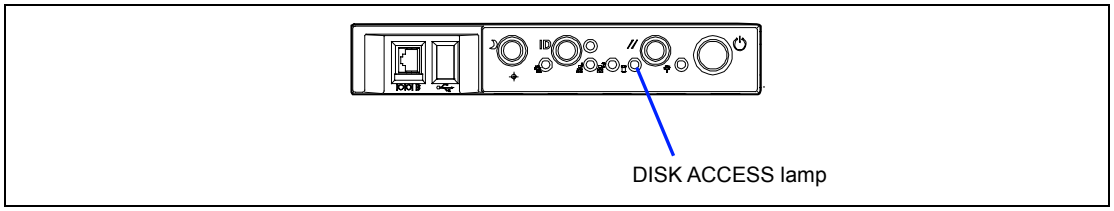
STATUS lamp indication	Description	Action
Lit in amber	A thermal error (critical) was detected.	Check internal fans for dust or debris. Also make sure that the internal fan cables are firmly connected. If this error indication persists, contact your service representative.
	A power supply(ies) was failed to operate.	Contact your service representative.
	A voltage error (critical) was detected.	Contact your service representative.
Flashing in amber	A power alarm was detected in each power system.	Identify the failed power supply unit and contact your service representative.
	A fan alarm was detected.	Make sure that the internal fan cables are firmly connected. If this error indication persists, contact your service representative.
	A thermal error (warning) was detected.	Check internal fans for dust or debris. Also make sure that the internal fan cables are firmly connected. If this error indication persists, contact your service representative.
	A voltage error (warning) was detected.	Contact your service representative.

DISK ACCESS Lamp

The DISK ACCESS lamp indicates the state of hard disks in the 3.5-inch disk bay.

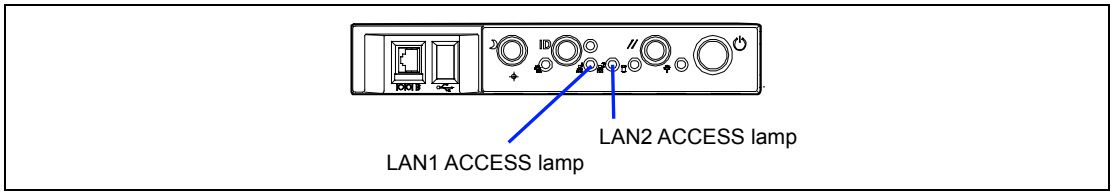
This lamp lights in green every time any of such hard disks is accessed.

When the DISK ACCESS lamp is lit in amber, it indicates that a hard disk error occurred. To identify a failed hard disk, see the lamps provided for each hard disk.



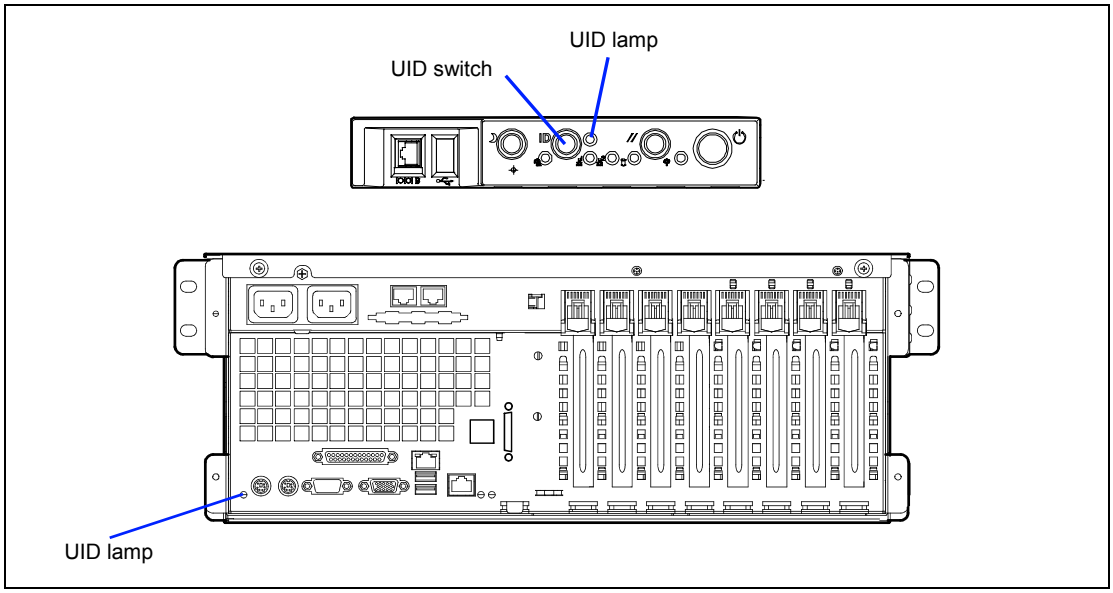
LAN1/LAN2 ACCESS Lamp

The LAN1/LAN2 ACCESS lamp is lit green when the server is connected to LAN. The lamp blinks while the server is accessed through the LAN (for packet transmission). The value next to the icon indicates the number of the network port on the rear panel.



UID Lamp

Pressing the UID switch turns the UID lamp located on the front and rear of the server on and off. The UID lamp is visible through the rear of the chassis and allows you to locate the server you're working on from the rear of the servers on a rack.

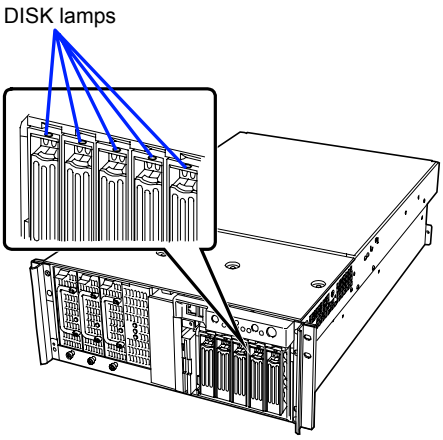


Access Lamps

The access lamps for the floppy disk drive and the CD-ROM drive light when access is made to a media in the drive.

Hard Disk Drive Lamp (DISK Lamp)

The disk lamp on the 3.5-inch disk bay has different meanings depending on the display status.



- Lighting green

 The hard disk is installed and powered on.

- Blinking green

 Indicates that the hard disk is accessed.

- Lighting amber

 Indicates that the installed hard disk is defected in the disk array configuration.

 NOTE: While hard disks are in the disk array configuration (RAID1/RAID5 or RAID0+1), a single failed hard disk does not affect the operation of the server. However, it is recommended to replace the failed hard disk and auto-rebuild (reconfigure) the hard disks as soon as possible. (You can hot-swap such a failed hard disk.)

- Alternate lighting green or amber

 Indicates that the hard disk is being rebuilt (this status is not a failure). If the defected hard disk is replaced with a new one in the disk array configuration, the data is automatically rebuilt (auto rebuild function). During the rebuild operation, the lamp is lit green or amber alternatively.

 The lamp goes off when the rebuild is terminated normally. The lamp goes on amber if the rebuild fails.

IMPORTANT: To abort rebuilding, power off the server. In such a case, restart the server, hot-swap the failed hard disk, and restart rebuilding. Observe the following notes to use the auto-rebuild feature.

- Do not power off the server. (If the server is powered off before rebuilding hard disks, the auto-rebuild feature will not start.)
- When you removed a hard disk, wait at least 90 seconds before installing the hard disk back again.
- Do not replace another hard disk while rebuilding is in progress.

AC Standby Lamp

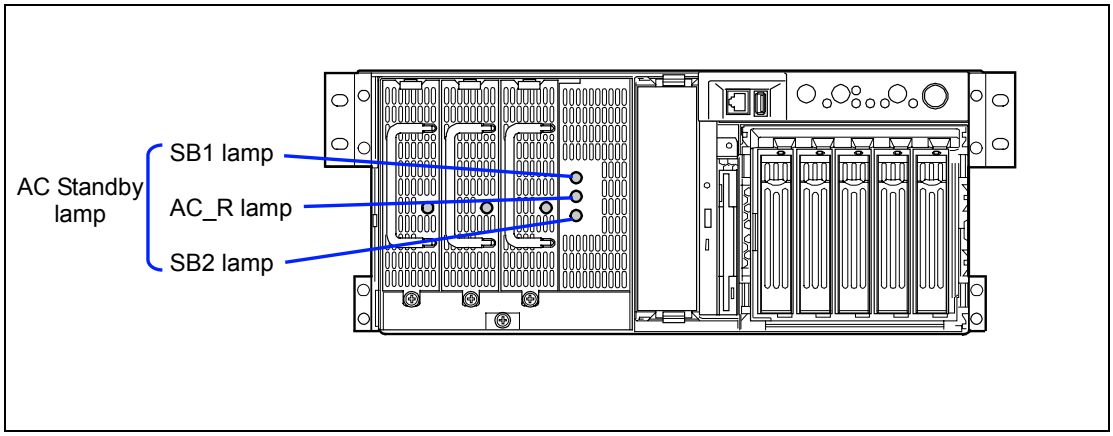
The power supply bay on the front of the server has the AC standby lamp.

- Default configuration

 If the power cord is connected to the AC inlet1 to supply AC power to the power supply unit, the SB1 lamp goes on green.

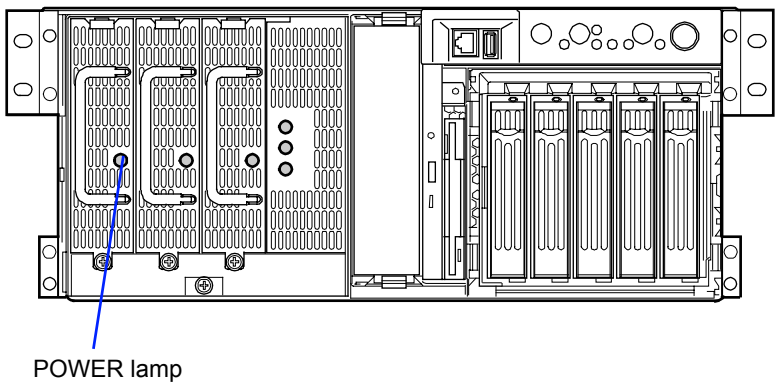
- Redundant configuration

 If the power system of the server is in the redundant configuration with optional power supply unit and the power cords are connected to the AC inlet1 and AC inlet2 to supply AC power to the all power supply units, the SB1 and SB2 lamp go on green. After turning on the server, the AC_R lamp also goes on green.



Power Lamp

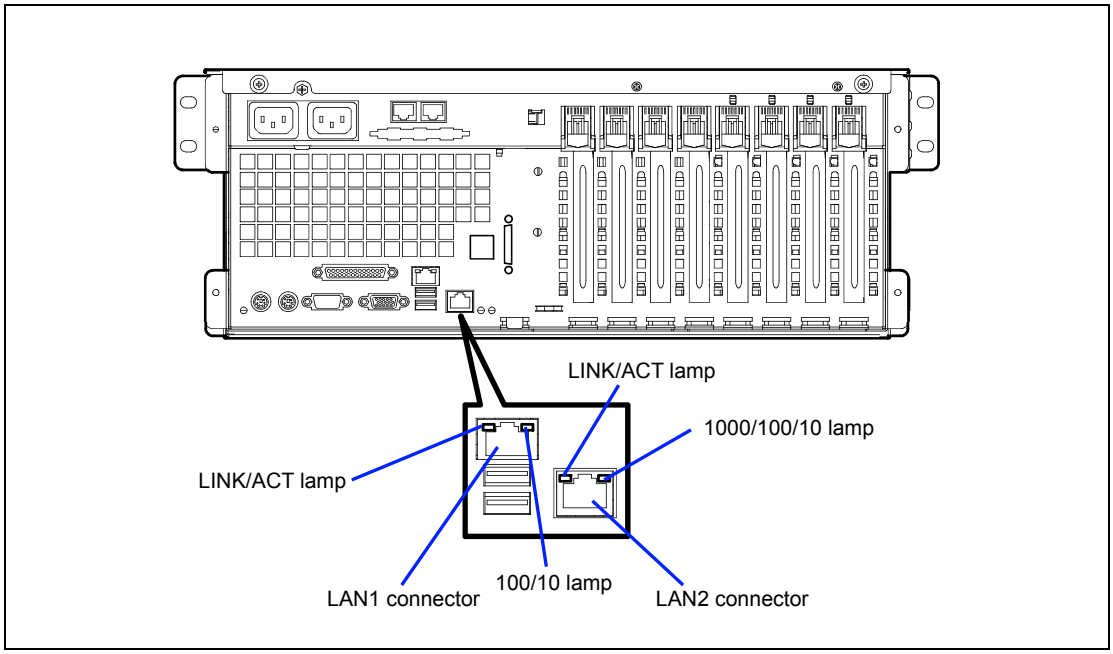
The power supply unit has the Power lamp. When the power of the server is turned on, the lamp goes on green. If the lamp is not lit after turning on the power of the server, the power supply unit may be defected. Contact you service representative to replace the power supply unit.



NOTE: The server equipped with an optional power supply unit can continue the operation with the standard power supply unit if the other power supply unit is defected (redundant function). The defected power supply unit can be replaced with a new one in the hot-swap mode without power interruption.

LAN Connector Lamps

LAN1 and LAN2 connectors on the rear panel have two lamps as follows.



- LINK/ACT lamp

 The link/ACT lamp indicates the state of each network port normally equipped with the server. If the power is supplied to the server and the hub and they are correctly connected with each other, the lamp is lit green (LINK state). If information is transmitted through a network port, the lamp blinks green (ACT state).

 If the lamp is not lit in the LINK state, check the network cable and the cable connection. If the lamp is not lit still after the checking, the network (LAN) controller may be defected. Contact your service representative.

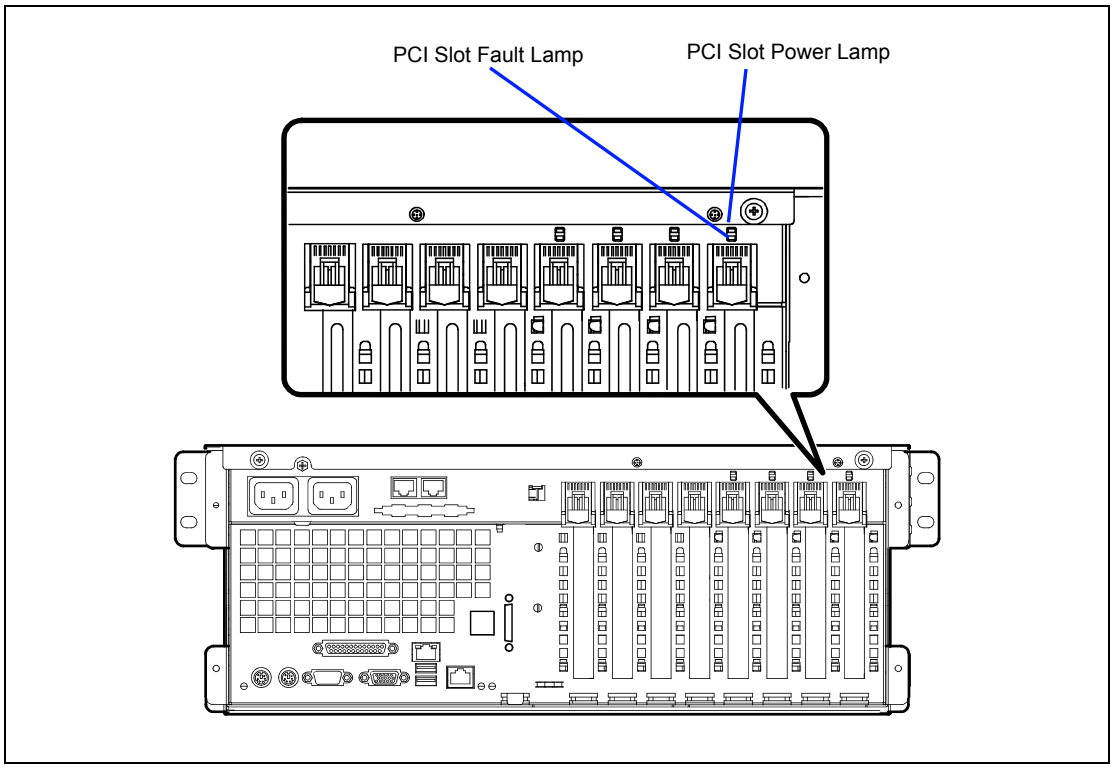
- 100/10 lamp (LAN1)

 The 100/10 lamp indicates whether the LAN1 port normally equipped with the server is operated through the 100BASE-TX or 10BASE-T network interface. If the lamp is lit amber, the network port is operated through 100BASE-TX. If the lamp is off, the network port is operated through 10BASE-T.

- 1000/100/10 lamp (LAN2)

 The 1000/100/10 lamp indicates whether the LAN2 port normally equipped with the server is operated through the 1000BASE-T, 100BASE-TX or 10BASE-T network interface. If the lamp is lit amber, the network port is operated through 1000BASE-T. If the lamp is lit green, the network port is operated through 100BASE-TX. If the lamp is off, the network port is operated through 10BASE-T.

PCI Slot Lamps



PCI Slot Power Lamp

The PCI slot power lamp lights in green when a PCI board is installed in the slot and powered up.

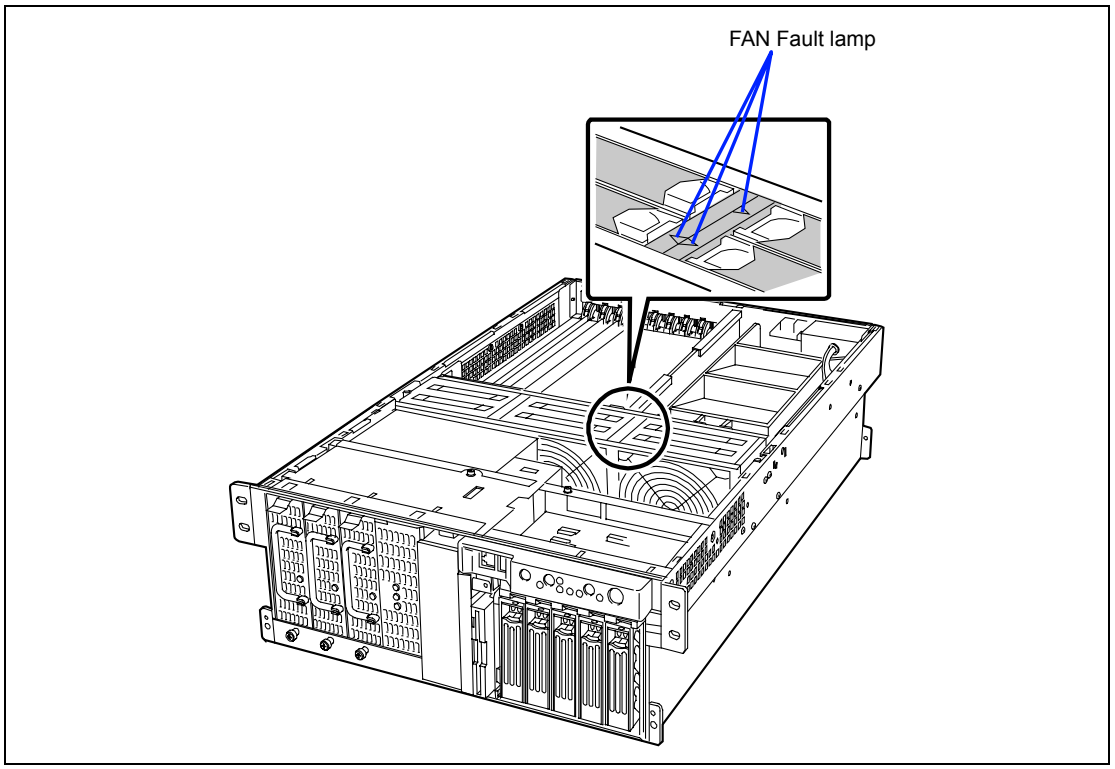
PCI Slot Fault Lamp

This lamp is available only when the operation system is Windows 2000.
If the driver of a Hot Plug PCI board is stopped under Windows 2000 and then the PCI board is logically disconnected from the system, PCI slot fault lamp blinks in amber.
If an error occurred on PCI board or the slot installed the PCI board, this lamp lights in amber.

FAN Fault Lamps

FAN Fault lamp is adjacent to each fan module. These lamps are triangular in shape and point to their respective fans. When the cooling fan is functioning normally, the lamp does not light. When a fan is not functioning normally, the lamp lights in red. A cooling fan failure is also indicated by the status lamp located on the front panel. The failed fan may be hot-swapped.

IMPORTANT: Do not remove the fan that is normally operating. Ask your service representative for replacement of the cooling fan. If a cooling fan fails, do not continue to operate the system, but ask your service representative for replacement as soon as you can.



ERROR MESSAGES

If an error occurs in the server, an error message appears on the display unit connected to the server.

Error Messages after Power-on

Powering on the server automatically starts the self-diagnostic program, POST (Power On Self-Test). When the POST detects any error, it displays an error message and its measure on the display unit.

Follow the table below to troubleshoot such errors. However, even when there is no hardware failure, use of the keyboard or mouse at the following timing causes the POST to assume a keyboard controller error and stop processing.

- Immediately after the server is powered
- Immediately after the system is rebooted in response to a keyboard instruction (simultaneous key entry of **Ctrl** + **Alt** + **Delete**)
- Immediately after the system is rebooted in response to an OS instruction
- During hardware initialization following restart of the POST

When the POST detects a hardware failure due to the above reason, restart the server once again. If the same error message reappears, you may assume there is no hardware error. To ensure normal operation of the server, however, make sure to follow the following restrictions.

- Do not make any keyboard entry or use the mouse before the memory count appears on the screen following the server power-on.
- Do not make any keyboard entry or use the mouse before the start-up message of the SCSI Configuration Utility appears on the screen following the server reboot.

IMPORTANT: Take a note on the on-screen message before contacting your service representative. The alarm indication would be a great help for maintenance.

POST Error Messages

When POST detects an error, it displays an error message on the display unit screen. The following table lists error messages, descriptions, and actions to take.

IMPORTANT: Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

Error code	Error message	Recommended Action
0200	Failure Fixed Disk.	Contact your service representative.
0210	Stuck Key.	Disconnect the keyboard and connect it again.
0211	Keyboard error.	• Disconnect the keyboard and connect it again. • Restart the system. If the error cannot be corrected, contact your service representative.
0212	Keyboard Controller Failed.	
0213	Keyboard locked - Unlock key switch.	Release the lock of the key switch. If the error cannot be corrected in spite of the release of the lock, contact your service representative.
0220	Monitor type does not match CMOS - Run SETUP.	Start the SETUP. If the error cannot be corrected in spite of the start of SETUP, contact your service representative.
0230	System RAM Failed at offset.	Contact your service representative.
0231	Shadow Ram Failed at offset.	
0232	Extended RAM Failed at address line.	
0250	System battery is dead - Replace and run SETUP.	Contact your service representative to replace the battery. (After restarting the computer, start the SETUP to provide the setting again.)
0251	System CMOS checksum bad - Default configuration used.	The default values have just been set. Start the SETUP to provide the setting again. If the error cannot be corrected, contact your service representative.
0252	Password checksum bad - Passwords cleared.	The password has just been cleared. Start the SETUP to provide the setting again.
0260	System timer error.	Start the SETUP to set the date and time again. If the same error occurs successively in spite of the resetting, contact your service representative.
0270	Real time clock error.	
0271	Check date and time setting.	
0280	Previous boot incomplete – Default configuration used	Contact your service representative.
02B0	Diskette drive A error.	Start the SETUP to set the "Legacy Floppy A" and "Legacy Floppy B" in the Main menu again. If the same error occurs successively in spite of the resetting, contact your service representative.
02B1	Diskette drive B error.	
02B2	Incorrect Drive A type - run SETUP.	Start the SETUP to provide the setting again. If the error cannot be corrected, contact your service representative.
02B3	Incorrect Drive B type - run SETUP.	

Error code	Error message	Recommended Action
02D0	System cache error - Cache disabled.	The cache cannot be used. Contact your service representative.
02D1	System Memory exceeds the CPU's caching limit.	Contact your service representative.
02F5	DMA Test Failed.	
02F6	Software NMI Failed.	
02F7	Fail-safe Timer NMI Failed.	
0500	Expansion ROM not initialized - PCI Slot 01	
0501	Expansion ROM not initialized - PCI Slot 02	
0502	Expansion ROM not initialized - PCI Slot 03	
0503	Expansion ROM not initialized - PCI Slot 04	
0504	Expansion ROM not initialized - PCI Slot 05	
0505	Expansion ROM not initialized - PCI Slot 06	
0506	Expansion ROM not initialized - PCI Slot 07	
0507	Expansion ROM not initialized - PCI Slot 08	
0611	IDE configuration changed.	
0613	COM A configuration changed.	
0614	COM A config. error - device disabled.	
0615	COM B configuration changed.	Contact your service representative.
0616	COM B config. error - device disabled.	
0617	Floppy configuration changed.	
0618	Floppy config. error - device disabled.	
0619	Parallel port configuration changed.	
061A	Parallel port config. error - device disabled.	
0B00	Rebooted during BIOS boot at Post Code.	
0B1B	PCI System Error on Bus/Device/Function.	
0B1C	PCI Parity Error on Bus/Device/Function.	
0B28	Unsupported Processor detected on Processor 1.	Make sure that the server supports the CPU. If you are not sure, contact your service representative to request the maintenance.
0B29	Unsupported Processor detected on Processor 2.	
0B2A	Unsupported Processor detected on Processor 3.	
0B2B	Unsupported Processor detected on Processor 4.	
0B30	Fan 1 Alarm occurred.	A fan failure or fan clogging may occur. Contact your service representative to request the maintenance.
0B31	Fan 2 Alarm occurred.	
0B32	Fan 3 Alarm occurred.	
0B33	Fan 4 Alarm occurred.	
0B34	Fan 5 Alarm occurred.	
0B35	Fan 6 Alarm occurred.	

Error code	Error message	Recommended Action
0B50	Processor #1 with error taken off line.	The CPU is degraded. Contact your service representative.
0B51	Processor #2 with error taken offline.	
0B52	Processor #3 with error taken offline.	
0B53	Processor #4 with error taken offline.	
0B5F	Forced to use Processor with error	Because an error is detected in every CPU, the system is forcibly started. Contact your service representative.
0B60	DIMM group #1 has been disabled	Contact your service representative.
0B61	DIMM group #2 has been disabled	
0B62	DIMM group #3 has been disabled	
0B70	The error occurred during temperature sensor reading.	Contact your service representative.
0B71	System Temperature out of the range.	A fan failure or fan clogging may occur. Contact your service representative to request the maintenance.
0B74	The error occurred during voltage sensor reading.	Contact your service representative.
0B75	System voltage out of the range.	
0B78	The error occurred during fan sensor reading	
0B7C	The error occurred during redundant power module confirmation	Contact you service representative to replace the power supply unit.
0B7D	The normal operation can't be guaranteed with use of only one PSU	Contact you service representative to add an additional power supply unit or replace the existing power supply unit.
0B80	BMC Memory Test Failed.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B81	BMC Firmware Code Area CRC check failed.	
0B82	BMC core hardware failure.	
0B83	BMC IBF or OBF check failed.	
0B8A	BMC SEL area full.	
0B8B	BMC progress check timeout.	
0B8C	BMC command access failed.	
0B8D	Could not redirect the console - BMC Busy -	
0B8E	Could not redirect the console - BMC Error -	
0B8F	Could not redirect the console - BMC Parameter Error -	
0B90	BMC Platform Information Area corrupted.	
0B91	BMC update firmware corrupted.	
0B92	Internal Use Area of BMC FRU corrupted.	All the commands and functions other than the FRU command and the EMP function can be used. This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B93	BMC SDR Repository empty.	Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.

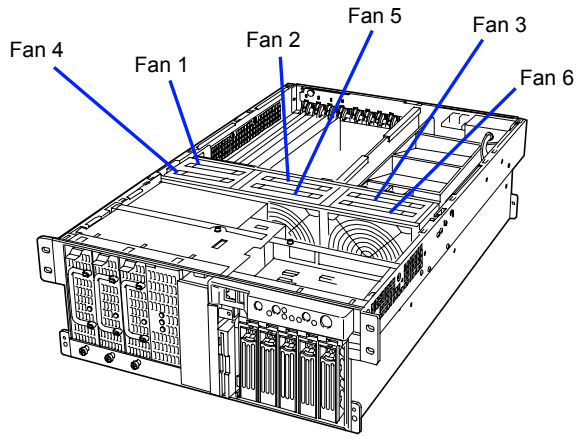
Error code	Error message	Recommended Action
0B94	IPMB signal lines do not respond.	All the functions other than the function of accessing to SMC through IPMB can be used. This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B95	BMC FRU device failure.	All the commands and functions other than the FRU command and the EMP function can be used. This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B96	BMC SDR Repository failure.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B97	BMC SEL device failure.	
0B98	BMC RAM test error.	
0B99	BMC Fatal hardware error.	
0B9A	BMC not responding.	
0B9B	Private I2C bus not responding.	
0B9C	BMC internal exception.	
0B9D	BMC A/D timeout error.	
0B9E	SDR repository corrupt.	
0B9F	SEL corrupt.	
0BB0	SMBIOS - SROM data read error.	Contact your service representative.
0BB1	SMBIOS - SROM data checksum bad.	
0BC0	POST detected startup failure of 1st Processor.	Contact your service representative to replace the CPU.
0BC1	POST detected startup failure of 2nd Processor.	
0BD0	1st SMBus address not acknowledged.	Contact your service representative to replace the board specified in the system event log.
0BD1	1st SMBus device Error detected.	
0BD2	1st SMBus timeout.	
0BD3	2nd SMBus address not acknowledged.	
0BD4	2nd SMBus device Error detected.	
0BD5	2nd SMBus timeout.	
0BD6	3rd SMBus address not acknowledged.	
0BD7	3rd SMBus device Error detected.	
0BD8	3rd SMBus timeout.	
0BD9	4th SMBus address not acknowledged.	Contact your service representative to replace the board specified in the system event log.
0BDA	4th SMBus device Error detected.	
0BDB	4th SMBus timeout.	
0BDC	5th SMBus address not acknowledged.	
0BDD	5th SMBus device Error detected.	
0BDE	5th SMBus timeout.	
0BE8	IPMB address not acknowledged.	Contact your service representative.
0BE9	IPMB device Error detected.	
0BEA	IPMB timeout.	

Error code	Error message	Recommended Action
8120	Unsupported DIMM detected in DIMM group #1.	Contact your service representative to replace the four DIMMs in the relevant group.
8121	Unsupported DIMM detected in DIMM group #2.	
8122	Unsupported DIMM detected in DIMM group #3.	
8130	Mismatch DIMM detected in DIMM group #1.	See the labels put on the DIMMs to make sure that the DIMMs of the same type are installed in groups. If DIMMs of different types are installed in one or more groups, contact the service representative to replace DIMMs properly.
8131	Mismatch DIMM detected in DIMM group #2.	
8132	Mismatch DIMM detected in DIMM group #3.	
8140	DIMM group #1 with error is enabled.	Contact your service representative to replace the four DIMMs in the relevant group.
8141	DIMM group #2 with error is enabled.	
8142	DIMM group #3 with error is enabled.	
8150	NVRAM Cleared By Jumper.	Turn off the power. Then recover the jumper setting to the original setting.
8151	Password Cleared By Jumper.	
8160	Mismatch Processor Speed detected on Processor 1.	Check the frequency of the CPU. If it is unknown, contact your service representative.
8161	Mismatch Processor Speed detected on Processor 2.	
8162	Mismatch Processor Speed detected on Processor 3.	
8163	Mismatch Processor Speed detected on Processor 4.	
8170	Processor 1 not operating at intended frequency	
8171	Processor 2 not operating at intended frequency	
8172	Processor 3 not operating at intended frequency	
8173	Processor 4 not operating at intended frequency	
817F	All processors not operating at intended frequency	
8200	Online Spare Memory was not ready.	DIMM type mismatch is detected when the online spare memory feature is enabled. Contact your service representative.
8201	Mirroring Memory was not ready.	DIMM type mismatch is detected or unnecessary installation in group #2 is detected when the online spare memory feature is enabled. Check the DIMM type or installation. If the error cannot be corrected, contact your service representative.

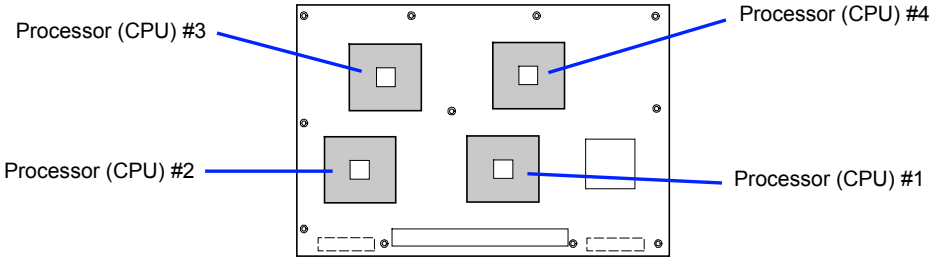
The following figures show the location of specific components referenced in the POST error codes and messages table listed above.

NOTE: Failed CPU or memory boards can be also identified with the BIOS SETUP utility.

■ Fans

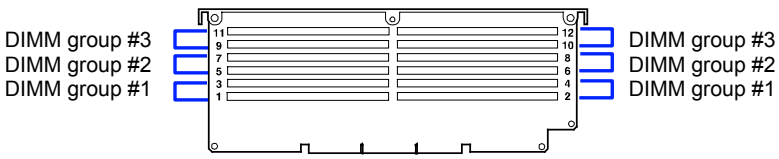


■ Processors (CPUs)



■ Memory board

The DIMM group consists of four DIMM boards.



Beep Codes

If an error occurs during the POST, the server beeps, indicating the type of error.

Each number indicates the number of short beeps, and a hyphen indicates a pause. For example, the beep interval 1-2-2-3 indicates 1 beep, pause, 2 beeps, pause, 2 beeps, pause, and 3 beeps notifying that the checksum error occurred on ROM.

Beep code	Description	Recommended action
1-2	Option ROM initialization error	1. Check if the setting with SETUP is correct. 2. Remove the PCI board and install it again to check if it operates normally. 3. Replace the PCI board and check if it operates normally. 4. Replace the baseboard.
	Video BIOS initialization error	1. Check if the connector of the display is properly connected. 2. Replace the baseboard.
1-2-2-3	ROM checksum error	Replace the baseboard.
1-3-1-1	DRAM refresh test error	1. Check if the DIMM is properly installed. 2. Remove the DIMM once, and then re-install it to check if it operates normally. 3. Ask your service representative to replace the failed DIMM or baseboard.
1-3-1-3	Keyboard controller error	1. Check if the keyboard is properly connected. 2. Replace the baseboard.
1-3-3-1	No memory or capacity check error	1. Check if the DIMM is properly installed. 2. Remove the DIMM once, and then re-install it to check if it operates normally. 3. Ask your service representative to replace the failed DIMM or baseboard.
1-3-4-3	All memory groups error	
1-5-1-1	CPU startup error	1. Check if the CPU is properly installed. 2. Remove the CPU once, and then re-install it to check if it operates normally. 3. Ask your service representative to replace the failed CPU or processor board.
1-5-2-1	No CPU error	1. Check if the CPU is properly installed. 2. Remove the CPU once, and then re-install it to check if it operates normally. 3. Ask your service representative to replace the failed CPU or processor board.
1-5-4-4	Power failure	One of the internal boards has failed. Ask your service representative to replace the failed board.
2-2-3-1	Unexpected interrupt test error	Replace the processor or baseboard.

NOTE: Beep code 1-5-4-2 informs you that AC power supply is interrupted due to power failure or momentary voltage drop and the system is restarted. This is not an error.

SOLVING PROBLEMS

When the server fails to operate as expected, see the following to find out your problem and follow the instruction given before asking for repair.

If the server still fails to operate successfully after solving your problem, take a note on the on-screen message and contact your service representative.

Problems with Server

No screen display appears with beep:

- ❑ Are DIMMs installed securely?
 - → Check whether DIMMs are connected to the mating connectors firmly.
 - → Check whether DIMMs of different specifications are installed in the specific group. See Chapter 9 for the specifications of DIMMs.

Fail to power on the server:

- ❑ Is the server is properly supplied with power?
 - → Check if the power cord is connected to a power outlet (or UPS) that meets the power specifications for the server.
 - → Make sure to use the power cord provided with the server. Check the power cord for broken shield or bent plugs.
 - → Make sure the power breaker for the connected power outlet is on.
 - → If the power cord is plugged to a UPS, make sure the UPS is powered and it outputs power. See the manual that comes with the UPS for details.

 Power supply to the server may be linked with the connected UPS using the BIOS setup utility of the server.

 <Menu to check: [Server] - [AC-LINK]>
- ❑ Did you press the POWER switch?
 - → Press the POWER switch on the front of the server to turn on the power (the POWER/SLEEP lamp lights).

Fail to power of the server / SLEEP switch is disabled:

- ❑ Is the POWER switch or SLEEP switch enabled?

 → Restart the server and start the BIOS setup utility.

 <Menu to check: [Security] - [Power Switch Inhibit]>

- ❑ Is the server running in the Secure Mode?

 → The POWER switch and the SLEEP switch are disabled in the Secure Mode. (Forced shutdown is also not available.) To release the Secure Mode, enter the password specified with the BIOS setup utility.

POST fails to complete:

- ❑ Is the DIMM board installed?

 → At least four DIMM boards are required for operation.

- ❑ Is the memory size large?

 → The memory check may take a few seconds if the memory size is large. Wait for a while.

- ❑ Did you perform any keyboard or mouse operation immediately after you started the server?

 → If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server once again. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.

- ❑ Does the server have contains appropriate memory boards or PCI devices?

 → Operation of the server with unauthorized devices is not guaranteed.

Fail to access to internal or external devices (or such devices fail to operate):

- ❑ Are cables properly connected?

 → Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.

- ❑ Is the power-on order correct?

 → When the server has any external devices connected, power on the external devices first, then the server.

- ❑ Did you install drivers for connected optional devices?

 → Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.

- ❑ Is BIOS configuration correct?

 → When the server has PCI devices connected, make sure to set the PCI device interrupt and others with the BIOS setup utility of the server. (Most PCI devices generally do not require any change to the configuration, but some boards do require specific settings. Refer to the manual that comes with the board for details to make correct settings.

 <Menus to check: [Advanced] - [Advanced Chipset Control] - [PCI Device]>

 → Some devices connected to the serial or parallel port may require I/O port address or operation mode settings. Refer to the manual that comes with the board for details to make correct settings.

 <Menu to check: [Advanced] - [I/O Device Configuration]>

The keyboard or mouse fails to operate:

- ❑ Is the cable properly connected?

 → Make sure that the cable is connected to the correct connector on the rear of the server.

 → The keyboard or mouse does not operate if it is connected when the server is powered (not applicable to USB devices). Power of the server first and connect it properly.

- ❑ Is BIOS configuration correct?

 → The keyboard and mouse may be disabled with the BIOS setup utility of the server. Check the settings with the BIOS setup utility.

 <Menus to check: [Advanced] - [I/O Device Configuration] - [PS/2 Mouse], [Advanced] - [Numlock]>

- ❑ Are the server drivers installed?

 → Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

- ❑ Is the server in the Secure Mode?

 → In the Secure Mode, the keyboard and mouse are disabled. To release the Secure Mode, enter the password specified with the BIOS setup utility.

Fail to access (read or write) to the floppy disk:

- ❑ Does the floppy disk drive contain a floppy disk?

 → Insert a floppy disk into the floppy disk drive until it clicks.

- ❑ Is the floppy disk write-protected?

 → Place the write-protect switch on the floppy disk to the "Write-enabled" position.

- ❑ Is the floppy disk formatted?

 → Use a formatted floppy disk or format the floppy disk in the floppy disk drive. Refer to the manual that comes with the OS for formatting a floppy disk.

- ❑ Is BIOS configuration correct?

 → The floppy disk drive may be disabled with the BIOS setup utility of the server. Check the setting with the BIOS setup utility.

 <Menus to check:

 [Main] - [Legacy Floppy A]

 [Security] - [Floppy Write Protect]>

❑ Is the server in the Secure Mode?

→ In the Secure Mode, write access to the floppy disk may be disabled. To release the Secure Mode, enter the password specified with the BIOS setup utility.

Fail to access to the CD-ROM:

❑ Is the CD-ROM properly set in the CD-ROM drive tray?

→ The tray is provided with a holder to secure the CD-ROM. Make sure that the CD-ROM is placed properly in the holder.

❑ Is the CD-ROM applicable to the server?

→ The CD-ROM for Macintosh is not available for use.

Inserted the correct CD-ROM but the message like the following is displayed:

```
The CD-ROM is not inserted or the wrong CD-ROM is inserted.
Please insert the correct CD-ROM.
OK
```

❑ Is the data side of the CD-ROM dirty or injured?

→ Take the CD-ROM out of the CD-ROM drive, confirm that it is not dirty or injured, reset and click [OK].

Fail to access the hard disk:
(Refer to the documentation supplied with the disk array controller.)

❑ Is the hard disk applicable to the server?

→ Operation of any device that is not authorized by NEC is not guaranteed.

❑ Is the hard disk properly installed?

→ Make sure to lock the hard disk with the lever on its handle. The hard disk is not connected to the internal connector when it is not completely installed (see Chapter 9).

Fail to access the (internal or external) SCSI devices:

- ❑ Is the SCSI device applicable to the server?

 → Operation of any SCSI device that is not authorized by NEC is not guaranteed.

- ❑ Is the cable connection changed?

 → The SCSI connector (B) on the baseboard in the machine can be used for either built-in file devices or external SCSI devices. The connection to external devices must be switched by modifying cable connection properly. See "Cable connection" in the Hardware Volume for details.

- ❑ Are SCSI devices properly configured?

 → When the server has external SCSI devices connected, device settings, including SCSI ID and terminator, are required. Refer to the manual that comes with the SCSI device for details.

- ❑ Are the SCSI controllers (including optional controllers) properly configured?

 → Use the BIOS setup utility for proper configuration of SCSI devices connected to the SCSI connector on the baseboard. When the server has an optional SCSI controller installed and SCSI devices connected to it, use the BIOS setup utility that comes with the optional SCSI controller for proper configuration. See the manual that comes with the optional SCSI controller for details.

Cannot install the operating system correctly.

- ❑ Did you confirm the notes on installing the operating system?

 → See Chapter 6.

During Windows 2000 installation, the following warning is registered in the System Log of the Event Viewer:

```
Error detected on the device \Device\CdRom0
during the paging operation.
```

→ There is no problem on this issue.

Fail to start the OS:

- ❑ Is a floppy disk in the floppy disk drive?

 → Take out the floppy disk and restart the server.

- ❑ Is the NEC EXPRESSBUILDER CD-ROM in the CD-ROM drive?

 → Take out the NEC EXPRESSBUILDER CD-ROM and restart the server.

- ❑ Is the OS broken?

 → Use recovery process to recover the system.
 (See "Recovery for Windows 2000" in this Chapter.)

The event log after every logon to Windows 2000 includes the following error log:

> Description (D)
> The CPUs in this multiprocessor system are not all the same revision level. To use all processors the operating system restricts itself to the features of the least capable processor in the system. Should problems occur with this system, contact the CPU manufacture to see if this mix of processors is supported.

- ❑ Has the CPU been expanded?

 → If the different revision (stepping) of the processor is installed in the multiprocessor system, Windows 2000 logs the above information every startup. If this message is logged, it is no problem for operation.

The OS presents unstable operation:

- ❑ Did you update the system?

 → Installing a network drive after installation of the OS may cause unstable operation. Use the NEC EXPRESSBUILDER CD-ROM to update the system. (See Chapter 6.)

When any trouble occurred, the system does not run according to the specification of "Restart automatically":

→ When any trouble occurred on Windows 2000, the system may not restart automatically even if "Restart automatically" is specified. In such case, restart the system manually.

Cannot turn the power OFF at the blue screen:

→ If you want to turn off the power at the blue screen, execute forced power off (forced shut down: continue to press POWER switch for 4 seconds). The power will not be turned off if you press the switch just one time.

The server is not found on the network:

- ❑ Is the LAN cable connected?

 → Make sure to connect the LAN cable to the network port on the rear of the server. Also make sure that the LAN cable to use conforms with the network interface standard.

- ❑ Is BIOS configuration correct?

 → The internal LAN controller may be disabled with the BIOS setup utility of the server. Check the setting with the BIOS setup utility.

 <Menus to check:

 [Advanced] - [PCI Configuration] - [Embedded NIC 1], [Embedded NIC 2]>

- ❑ Have the protocol and service already configured?

 → Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.

- ❑ Is the transfer speed correct?

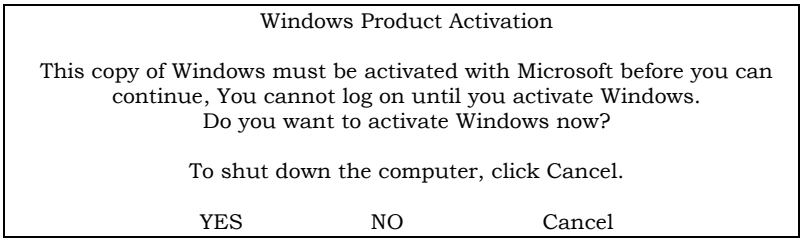
 → Open the network property dialog box in control panel to specify the "Link Speed & Duplex" value the same as the value specified for HUB.

The processor name displayed in [General] tab of [System Property] is not in correct position.

→ There is no problem for operation.

The system displays the message below and fails to log in.

→ In Windows Server 2003, the following message will be displayed if you use the operating system without executing the license authentication. Select "Yes", and execute the procedure for license authentication.



About System Log when re-starting the system on Windows Server 2003

Type: Warning
Source: E100B
Event ID: 4
Description: Adapter Intel(R) PRO/100 Network Connection: Adapter Link Down

→ When re-starting the system without connecting the network cable, this log may be found in system event log.
But this has no effect on the behavior of LAN driver.
Confirm that the system is connected with the LAN cable properly.
If 100Base LAN port is not utilized, disable 100Base LAN on device manager or disable it on BIOS configuration. Then, the log will not be registered.

Event logs in using SNMP Service in Windows Server 2003

Event Type: Warning
Event Source: EvntAgnt
Event Category: None
Event ID: 1015
Description: TraceLevel parameter not located in registry;
Default trace level used is 32.

Event Type: Warning
Event Source: EvntAgnt
Event Category: None
Event ID: 1003
Description: TraceFileName parameter not located in registry;
Default trace file used is .

→ The system will not be affect by these event logs. SNMP will not be affected either, so that you can ignore these logs.

A PCI board is not recognized.

- ❑ Is the PCI board installed correctly?

 → Confirm that the PCI board is installed in the slot correctly.

- ❑ Is the proper IRQ assigned for the board?

 → Assign the proper IRQ by referring to the Chapter 4.

- ❑ Is "Disabled" specified in [Option ROM] for the slot to install SCSI card (excluding the array board used for OS boot)?

 → Check the settings with the BIOS setup utility.

 <Menus to check: [Advanced] - [PCI Configuration] - [PCI Slot n] (n: PCI slot number of installed board) - [Option ROM Scan]>

- ❑ Is "Disabled" specified in [Option ROM] for the slot for added network board which is not used for network boot?

 → Check the settings with the BIOS setup utility.

 <Menus to check: [Advanced] - [PCI Configuration] - [PCI Slot n] (n: PCI slot number of installed board) - [Option ROM Scan]>

PCI hot-plug fails:

- ❑ Is BIOS configuration correct?

 → You must change the BIOS configuration to use the PCI hot-plug feature.

 <Menus to check: [Advanced] - [PCI Configuration] - [Hot Plug PCI Control] - [Minimum/Middle/Maximum*]>

 * Setting value depends on the board to be installed. See Chapter 4 for details.

 <Menus to check: [Advanced] - [PCI Configuration] - [Hot Plug PCI Control] - [Empty Bus Default Speed] - [PCI Slots 5-6] or [PCI Slots 7-8] - Transfer speed of the board to be installed>

The driver of a PCI board cannot be stopped from the OS when Hot Remove or Hot Replace is executed for the PCI board:

- ❑ Is another software using the PCI board for which Hot Remove or Hot Replace is to be executed?

 → If another software is using the PCI board for which Hot Remove or Hot Replace is to be executed, the driver of the PCI board cannot be stopped.
 Terminate the software, then stop the driver of the PCI board. If executing Hot Replace, restart the software after having mounted a new PCI board.

Problems with NEC EXPRESSBUILDER

When the server is not booted from the NEC EXPRESSBUILDER CD-ROM, check the following:

- ❑ Did you set the NEC EXPRESSBUILDER during POST and restart the server?

 → If you do not set the NEC EXPRESSBUILDER during POST and restart the server, an error message will appear or the OS will boot.

- ❑ Is BIOS configuration correct?

 → The boot device order may be specified with the BIOS setup utility of the server. Use the BIOS setup utility to change the boot device order to boot the system from the CD-ROM drive first.

 <Menu to check: [Boot]>

- ❑ Is an error message appeared?

 → When an error occurs while the NEC EXPRESSBUILDER is in progress, the following message appears.

 After this message appears, check the error and take the appropriate corrective action according to the message listed in the table below.

Message	Cause and Remedy
This machine is not supported.	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
NvRAM access error.	An access to the nonvolatile memory (NvRAM) is not acceptable.
Hard disk access error.	The hard disk is not connected or it is failed. Check whether the hard disk is correctly connected.
The system-specific information does not exist on the baseboard. Please restore the backup data or write the data by using [System Information Management] of the Off-line Maintenance Utility. Only the authorized personnel are allowed to do this operation.	The system-specific information cannot be acquired in the baseboard exchange and so on.

Problems with Express Setup

<For Windows 2000>

Following message appeared when you tried to install Express Setup to the hard disk that has smaller capacity than the specified partition size:

```
The specified partition size has exceeded the capacity of the hard disk.
The setup created the partition at the maximum size that can be reserved on the hard disk.
Setup will continue the process.
OK
```

→ It is not an abnormal condition. Press **Enter** to continue the installation.

The message can not be displayed correctly when copying the files from CD-ROM or checking CD-ROM:

→ Press **R**. When any messages appear again even if you press **R**, restart the Express Setup from the beginning. In case the same result occurred after the restart of installation, contact Maintenance Service Company and ask them to check the CD-ROM drive.

Express Setup terminated and asks to input setup information.

→ There are some errors on the specified setup information.
Follow the instruction to input the correct value. It is not necessary to cancel the installation. On Windows 2000, you might be asked to press Enter again after the last reboot of the setup.

[Complete] appears on the [Role of Computer] screen.

→ If you click [Complete] here, the setup will select the default value of Express Setup for the later specification to continue the process.

<The Default Value for Windows 2000>

The specification of network protocol

Protocol :	TCP/IP[DHCP Specified]
Service :	Select sharing Microsoft network files and printer.
Client :	Microsoft network client.
Component :	SNMP, IIS (Excluding Professional/Windows Server 2003)
Application :	NEC ESMPRO Agent
	Power Console Plus (When connecting disk array controller)

[Complete] does not appear on [Role of Computer] screen.

→ The [Complete] does not appear if the setup information file that has already been created is loaded.

→ [Complete] appears only when you first entered the [Role of Computer] screen. Once you go to the next screen from [Role of Computer], the [Complete] will not appear even if you enter [Back] to go back to the [Role of Computer] screen.

Select [Use Existing Array] at [New/Existing RAID Configuration], but the OS is installed in the whole area of the disk.

→ Is there any other partition than the partition to re-use (excluding maintenance area)? If the partition other than the one to re-use does not exist, the setup will reserve the whole area of the disk to install Windows 2000.

Specified to join the Domain, but the system is installed as Workgroup.

→ When the setup fails to join the Domain during the installation, it will install the system as Workgroup. Open [System] in Control Panel to specify joining the Domain.

Specified large value as partition size, but when Windows 2000 is actually started, the system partition is created by 4095MB.

→ Is the [Partition Size] specified by the value larger than the real area? If you want to create one partition in all area of the hard disk(excluding the maintenance area) to install the OS, specify [All Area].

Windows 2000 started with different display resolution from the specified value.

→ If the specified display resolution can not be used, the system will use the nearest value or the default value of the driver.

Entered the incorrect Product ID/CD key.

→ Even if you entered the incorrect Product ID/CD key, Express Setup will start. However, the setup will stop and asks you to re-enter the correct value. Also in this case, input request will occur when rebooting after GUI setup completed during Express Setup. If these 2 inputs are done correctly, there is no problem on Windows 2000 setup.

Unable to specify the details of Network adapter.

→ In Express Setup, you can not specify the details of Network adapter. Specify them from Control Panel after starting Windows 2000.

Windows 2000 is started with Network adapter that has not been specified during Express Setup

→ Windows 2000 will install the recognized Network adapter specified as default value. If you want to modify the specification, it can be done from Control Panel after starting Windows 2000. Also, the Network adapter that has been specified during Express Setup but that is not connected will not be setup, though the protocol will only be installed.

Connected more than two Network adapter and specified different protocol for each adapter, but all the protocols are specified on either adapter.

→ It's a design. Each adapter is specified so that all the installed protocols can be used. The value that can not be specified during Express Setup will all be specified by default value.

When more than two Network adapter are specified, the detailed specification of TCP/IP protocol are all set to use DHCP.

→ When more than two Network adapter are specified, the detailed specification of the protocol may all be set by default value. Re-specify the details from Control Panel.

Not more than two Network adapter is connected, but the detailed specification of the protocol are all set by default.(e.g. Specified IP Address on TCP/IP, but DHCP is specified)

→ Are you specifying more than two protocols?
In this case, the situation will be the same as connecting more than two Network adapter, so the detailed specification of the protocol are all set by default.
Re-specify the details from Control Panel after starting the OS.

Error Message during Disk Array Configuration

Refer to the manual that comes with the disk array controller for any trouble occurred on disk array in this system.

Problems with Master Control Menu

The master control menu fails to appear:

- ❑ Is your system Windows NT 4.0 or later, or Windows 95 or later?

 → The Master Control menu is supported by Windows NT 4.0 and Windows 95.

- ❑ Is **Shift** pressed?

 → Setting the CD-ROM with **Shift** pressed down cancels the Autorun feature.

- ❑ Is the system in the proper state?

 → The menu may not appear depending on the system registry setting or the timing to set the CD-ROM. In such a case, start the Explorer and run \MC\1ST.EXE in the CD-ROM.

Problems with Configuration Diskette Creator

<Common to Windows 2000>

The bit map of the Configuration Diskette Creator window is not displayed correctly during setting of setup information. (When the Trekking command is used)

→ If the specified number of colors is fewer than 256 in the display setting, the bit map is not displayed correctly, but the setup information can be displayed correctly.

The Point to Point tunneling protocol cannot be set.

→ The protocol is not supported at present. After installation, set the protocol through Control Panel. In this case, rebooting is not necessary.

The details of a network adapter cannot be set.

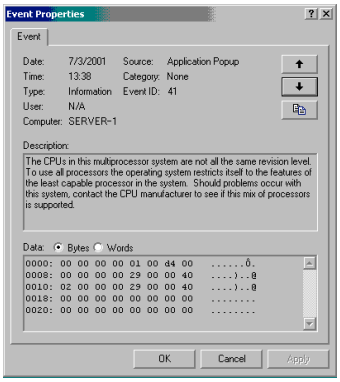
→ Configuration Diskette Creator is unable to set the details of network adapters. Start Windows 2000, and set the details through Control Panel.

COLLECTING EVENT LOG

This section describes on how to collect the log of various events that occurred on the server.

IMPORTANT: If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.

NOTE: The different revision processor may be mixed in additional CPU kit. When Windows 2000 is used, following message may be appeared in the System Log of the Event Viewer after extension the different revision of two or more CPUs in the NEC Express server. If this message is logged, it is no problem for operation.



1. Click [Management Tool] → [Event Viewer] from the Control Panel.
2. Select the type of the log to collect.

 On [Application Log], the events related to the running application is archived. On [Security Log], the events related to the security is archived. On [System Log], the events occurred at the item which configures Windows 2000 system is archived.
3. Click [Save as...] in the [Run] menu.
4. Input the file name of archived log in the [File Name] box.
5. Select the type of the log file you want to save in the [File Type] list box and click [OK].

For more information, refer to Windows 2000 Online Help.

COLLECT CONFIGURATION INFORMATION

This section describes on how to collect the information on hardware configuration and inside specification.

In order to collect information, "Diagnostic Program" is used.

IMPORTANT: If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.

1. Point to [Settings] in Start menu, and click [Control Panel].

 The [Control Panel] dialog box appears.

2. Double-click [Management Tool], and double-click [Computer Management].

 The [Computer Management] dialog box appears.

3. Click [System Tool] → [System Information].

4. Click [Save as System Information File] in the [Operation] menu.

5. Input the file name to save in the [File Name] box.

6. Click [Save].

COLLECTING DR. WATSON DIAGNOSTIC INFORMATION

Dr. Watson collects diagnostic information related to application errors. The location to save the information can be specified as you like. For more information, refer to Chapter 5.

MEMORY DUMP

If an error occurs, the dump file should be saved to acquire necessary information.

If you saved the dump to DAT, write down that it is saved as "NTBackup" or "ARCServe" on the label. You can specify the location to save the diagnostic information as you like. For more information, refer to "Specifying Memory Dump (Debug Information (refer to Chapter 5 for detail)".

IMPORTANT:

- Consult with your service representative before dumping the memory. Dumping the memory while the server is in the successful operation may affect the system operation.
- Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system may result in dumping improper data.

Preparing for Memory Dumping

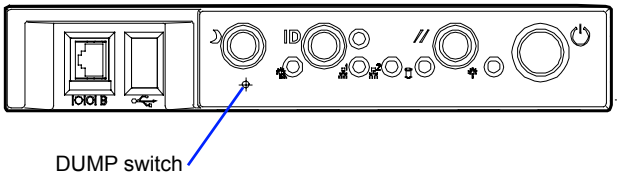
Memory dumping with the DUMP switch may disable the server to restart. In such a case, it is required to force the server to shut down. This forced shutdown, however, is not available if "Enable" is selected for "Power Switch Inhibit" on the Security menu of the BIOS setup utility, SETUP, because this setting disables POWER switch operation.

Follow the procedure below to change the setting to enable the forced shutdown and restart of the server.

1. Power on the server and start the BIOS setup utility, SETUP.
2. Select "Disable" for "Power Switch Inhibit" in the Security menu.
3. Save the configuration data and exit the SETUP.

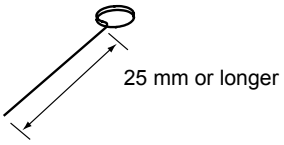
Saving the Dump File

Press the DUMP switch to save the dump file when an error occurs. Insert a metal pin (a straightened large paper clip will make a substitute) into the switch hole to press the DUMP switch.



Pressing the DUMP switch saves the dump file in the specified directory. (Memory dumping may not be available when the CPU stalls.)

IMPORTANT: Do not use a toothpick or plastic stick that is easy to break. Do not use any pin easily broken such as a toothpick or plastic pin. Use a pin having the length of 1 inch (25 mm) or longer.



RECOVERY FOR Windows 2000

If any file necessary for running the OS is damaged, use the following procedures to recover the system.

IMPORTANT:

- After recovering the system, see "Updating the System" in Chapter 5 and be sure to update the system.
 Also on Windows 2000, you need to update all the drivers after the system update. For more information, see "Installing and Setting Device Drivers" in Chapter 5.
- If the hard disk can not be recognized, you can not recover the system.

Follow the procedure below and use the information in the disk, not system recovery disk, to recover the system.

1. Turn on the power of the system.
2. Insert Windows 2000 CD- ROM into the CD-ROM drive of your server.
3. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)
4. Press **F6** while the message "Setup is inspecting your computer's hardware configuration..." is displayed at the upper part of the screen.

 NOTE: Nothing is changed on the screen through **F6** is pressed.

5. Press **S** when the following message appears:

   ```
   Setup could not determine the type of one or more mass storage devices
   installed in your system, or you have chosen to manually specify an adapter.
   Currently, Setup will load support for the following mass storage devices.
   ```

 Select [Other] and press **Enter**.

6. Insert Windows 2000 OEM-DISK for NEC EXPRESSBUILDER into the floppy disk drive and press **Enter**.

   ```
   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   * Press ENTER when ready.
   ```

 Select the [Adaptec Ultra320 SCSI Cards (Win2000)] and press **Enter**.

 Then, it returns to the screen of step 5.

7. Select the proper SCSI Adapter and press **Enter**.

 – MegaRAID SCSI 320-2 Controller Driver (When N8103-81F board is installed.)

8. Press **R** to select the recovery option.

9. Select the keyboard.

10. If you are requested, press **R** to select system recovery procedure.

11. If you are requested, select either of the procedure below:

 [Manual Recovery] (Press **M**)

 Do not select this option unless you are a high-level user or a system administrator. If you use this option, you can recover the problems of system files, partition boot sector, and start-up environment.

 [Quick Recovery] (Press **F**)

 This option is very easy to use and the user does not need to do anything during the procedure. If you select this option, the system recovery disk program starts to recover the problems concerning system files, partition boot sector of system disk, and start-up environment (if multiple operating systems are installed on the system).

12. Follow the instruction displayed on the screen, and then press **L** at the screen which request you to insert system recovery disk. The system will be restarted once.

 NOTE: Starts the procedure without system recovery disk.

13. Repeat steps 1 to 10.

 The recovery procedure will be started.

 During the recovery, the missing files and the damaged files are replaced either to the files in C:\ I386 folder of hard disk or the files in systemroot\ Repair of the system partition. These replaced files do not reflect the changes of the configuration after the setup at all.

14. Follow the instruction displayed on the screen.

 If you take a note of any file name in which trouble is detected during the procedure, it is useful to diagnose how the system has been damaged.

15. Terminates the procedure if the recovery is successful.

 You can verify that the replaced files are correctly copied to the hard disk if the computer is restarted normally.

OFF-LINE MAINTENANCE UTILITY

The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent NEC ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

IMPORTANT:

- The Off-line Maintenance Utility is intended for use of your sales agent. The NEC EXPRESSBUILDER CD-ROM and the Off-line Maintenance Utility Bootable FD you have created contain a file that describes operation of the utility, but do not attempt to use the utility by yourself. Contact your sales agent and follow instructions.
- Starting the Off-line Maintenance Utility disables any access from a client to the server.

Starting the Off-line Maintenance Utility

The Off-line Maintenance Utility may be started in the following ways.

- From the CD-ROM

 Set the NEC EXPRESSBUILDER CD-ROM in the CD-ROM drive and reboot the system.

 After the menu is displayed on the screen, select "Tools" - "Off-line Maintenance Utility".

 The Off-line Maintenance Utility program starts from the CD-ROM.

- From the floppy disk

 Set the Off-line Maintenance Utility Bootable FD in the floppy disk drive and reboot the system.

 The Off-line Maintenance Utility program starts from the boot disk.

 The Off-line Maintenance Utility Bootable FD is created by selecting "Tools" - "Create Support FD" on the NEC EXPRESSBUILDER.

- Manual start (by pressing **F4**)

 When the Off-line Maintenance Utility is installed, press **F4** while the start-up screen of the server is on screen. The Off-line Maintenance Utility starts from the hard disk.

Features of Off-line Maintenance Utility

The Off-line Maintenance Utility provides the following features. (Available features vary depending on the way you started the Off-line Maintenance Utility.)

> **IMPORTANT:** See the on-line help for details of the Off-line Maintenance Utility. For further information, ask your sales agent.

- IPMI Information Viewer

 Provides the functions to view the system event log (SEL), sensor data record (SDR), and field replaceable unit (FRU) and to make a backup copy of them.

 Using this feature, you can find system errors and events to determine a maintenance part.

- BIOS Setup Viewer

 Provides the functions to export the current configuration data defined with the SETUP utility to a text file.

- System Information Viewer

 Provides the functions to view information on the processor and the BIOS and export it to a text file.

- System Information Management

 Provides the function to make a back-up copy of your data.

 Without the backup data, the system-specific information and/or configuration may not be restored.

 Only the authorized personnel is allowed to restore the backup data.

- Start of Utilities

 With the NEC EXPRESSBUILDER, you can start the following utilities installed in the maintenance partition.

 – System Management

 – System Diagnostics

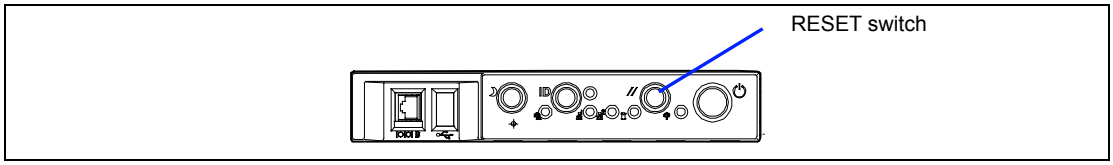
 – Maintenance Partition Update

- Chassis Identify

 The lamp on the machine is flashed for five seconds. This is convenient if you have to distinguish a machine among many machines on the rack.

RESETTING THE SERVER

- If the server halts before starting the OS, press and hold **Ctrl** and **Alt** and press **Delete**. This restarts the server.
- Pressing the RESET switch on the front panel reboots the server.

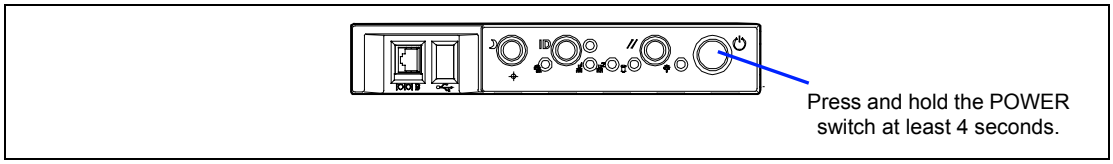


IMPORTANT: Resetting the server clears the DIMM memory and the data in process. To reset the server when it is not frozen, make sure that no processing is in progress.

FORCED SHUTDOWN

Use this function when an OS command does not shut down the server, the POWER switch does not turn off the server, or resetting does not work.

Press and hold the POWER switch on the server for at least four seconds. The power is forcibly turned off. To turn on the power back again, wait approximately 10 seconds after turning off the power (forced shutdown).



IMPORTANT: If the remote power-on function is used, cycle the power once to load the OS, and turn off the power again in the normal way.

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Chapter 9

Upgrading Your Server

This chapter describes internal optional devices available for the server, procedures for install or removing such optional devices, and notes on using them.

IMPORTANT:

- Optional devices described in this chapter may be installed or removed by any user. However, NEC does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user. NEC recommends you ask your service representative for install or removing any optional devices.
- Make sure to use only optional devices and cables authorized by NEC. Repair of the server due to malfunctions, failures, or damage resulted from installing inappropriate devices or cables will be charged.
- When you made any change to the hardware configuration, make sure to update the system (see Chapter 5 for details.).

SAFETY NOTES

Observe the following notes to install or remove optional devices safely and properly.

⚠ WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not disassemble, repair, or alter the server.
- Do not look into the CD-ROM drive.
- Do not remove the lithium battery.
- Disconnect the power plug before working with the server.

⚠ CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not lift the server only by a single person.
- Make sure to complete board installation.
- Do not install the server on the rack leaving the cover removed.
- Do not pinch your fingers with mechanical component.
- High temperature
- Put a connector cover on an unused connector.

ANTI-STATIC MEASURES

The server contains electronic components sensitive to static electricity. Avoid failures caused by static electricity when installing or removing any optional devices.

- Wear a wrist strap (an arm belt or anti-static glove).

 Wear a wrist strap on your wrist. If no wrist strap is available, touch an unpainted metal part of the cabinet before touching a component to discharge static electricity from your body.

 Touch a metal part regularly when working with components to discharge static electricity.

- Select a suitable work space.
 - Work with the server on the anti-static or concrete floor.
 - When you work with the server on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.
- Use a work table.

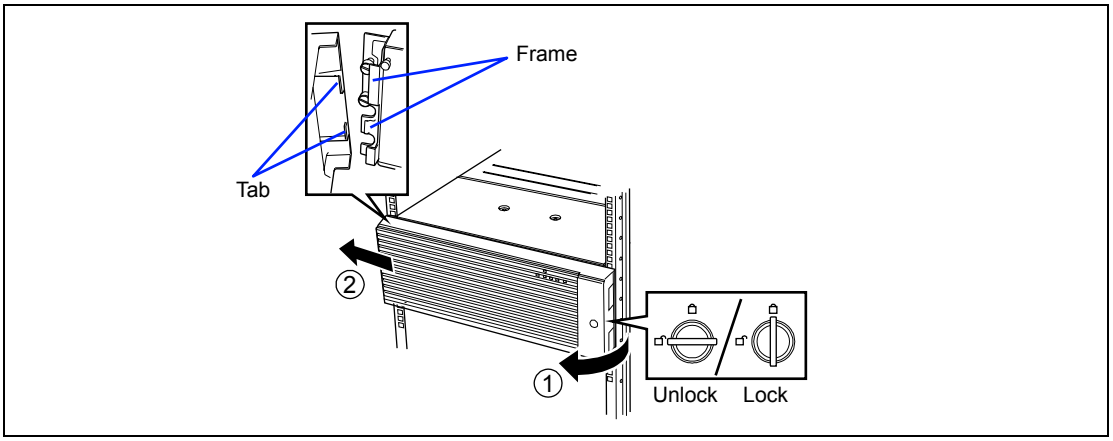
 Place the server on an anti-static mat to work with it.

- Cloth
 - Do not wear a wool or synthetic cloth to work with the server.
 - Wear anti-static shoes to work with the server.
 - Take off any jewels (a ring, bracelet, or wrist watch) before working with the server.
- Handling of components
 - Keep any component in an anti-static bag until you actually install it to the server.
 - Hold a component by its edge to avoid touching any terminals or components.
 - To store or carry any component, place it in an anti-static bag.

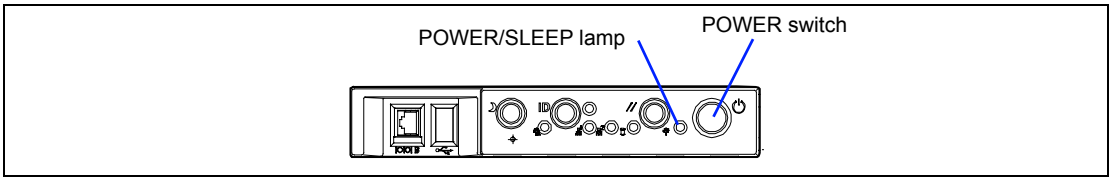
PREPARING FOR INSTALLATION AND REMOVAL

Follow the procedure below to prepare for installing or removing components.

1. Shut down the OS.
2. If the front bezel is locked, unlock it.
3. Grasp the right edge of the front bezel and pull the bezel towards you to open it.
4. Slide the front bezel left to disengage the mounting tabs and remove the front bezel from the chassis.



5. Press the POWER switch to power off the server (the POWER/SLEEP lamp goes off).



6. Remove all cables and power cords from the server (the AC Standby lamps on the front of the server go off).

> **NOTE:** Make sure to disconnect the power cord from the outlet before installing or removing the option devices. If you remove the internal cable with the power cord being connected, the STATUS lamp will light in amber when the server is powered. Disconnect the power cord, connect it again, and then restart the server.

To install the front bezel, follow these steps.

1. Position the front bezel so the mounting tabs of the front bezel are aligned with their mounting holes on the front of the system. Slide the bezel right until the bezel snaps into place.
2. Close and lock the front bezel.

TOOLS AND SUPPLIES NEEDED

- Phillips screwdriver
- Small flat tip-bladed screwdriver
- Extraction tool for processor heat sink clips
- Antistatic wrist strap and conductive foam pad (recommended)
- Pen or pencil
- Product Configuration Record Table (Appendix E)

As you integrate new parts in to the system, record the model and serial number of the server system, all installed options, and any other pertinent information specific to the server system.

DEVICE INSTALLATION OR REMOVAL PROCEDURE

Install or remove a component from the server in the following procedure.

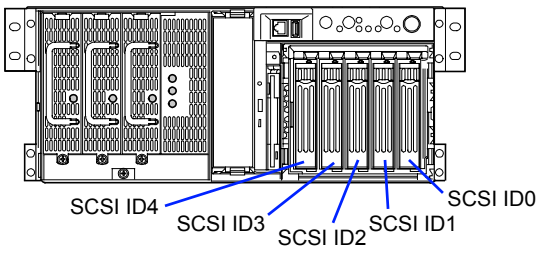
Hard Disk Drive

The server has five slots to install hard disks (Ultra 320 SCSI) in the 3.5-inch disk bay of the front of the server.

IMPORTANT:

- Do not use any hard disks that are not authorized by NEC. Installing a third-party hard disk may cause a failure of the server as well as the hard disk. Purchase hard disks of the following models:
 – N8150-161F (18.1 GB, 10,000 rpm, Ultra 320)
 – N8150-162F (36.3 GB, 10,000 rpm, Ultra 320)
 – N8150-163F (73.2 GB, 10,000 rpm, Ultra 320)
 – N8150-171F (146 GB, 10,000 rpm, Ultra 320)
 – N8150-164F (18.1 GB, 15,000 rpm, Ultra 320)
 – N8150-165F (36.3 GB, 15,000 rpm, Ultra 320)
 – N8150-172F (73.2 GB, 15,000 rpm, Ultra 320)
- To make array configuration, refer to the manual that comes with the optional disk array controller board.

All five slots may contain a hard disk approximately 25.4 mm (1 inch) high. The SCSI IDs of ID0 through ID4 are always assigned to hard disks as shown below.



The 3.5-in. disk bay is connected to the Ultra 320 SCSI (A) connector on the baseboard when the server is shipped.

To use the hard disk drives in a disk array configuration, reconnect the cable from the connector on the baseboard to the disk array controller connector. In the disk array configuration, use the same model of hard disk drives.

A dummy tray or dummy sponge is installed in the 3.5-inch disk bay. The purpose of a dummy tray or dummy sponge is to increase the cooling effect in the server. Install a dummy tray or dummy sponge block in slots not containing a hard disk drive.

IMPORTANT: Use the appropriate dummy tray or dummy sponge block for this server.

Installation

Take the following steps to install a hard disk drive. This procedure applies to all the slots.

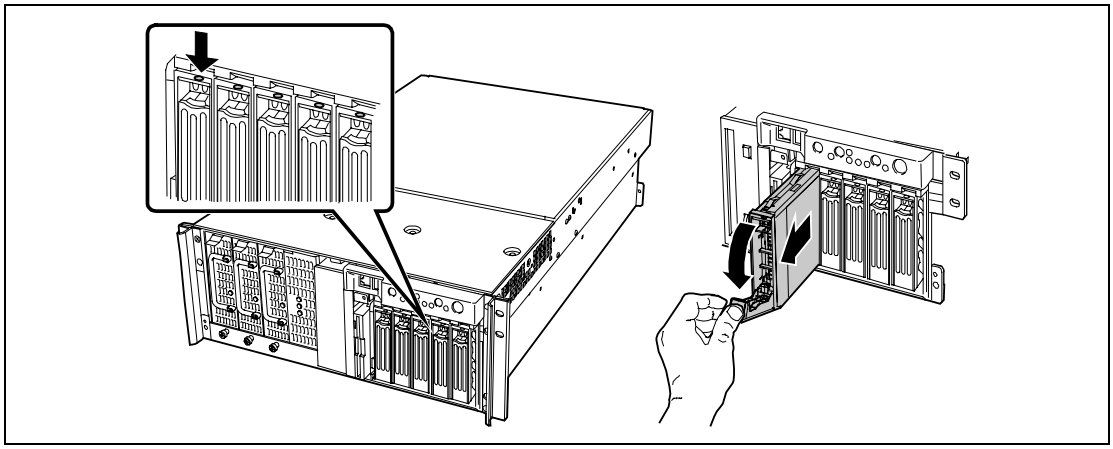
NOTE: Any hard disk can be installed or removed in or from the server only by removing the front bezel.

IMPORTANT: In the disk array configuration, use the same model of hard disk drives.

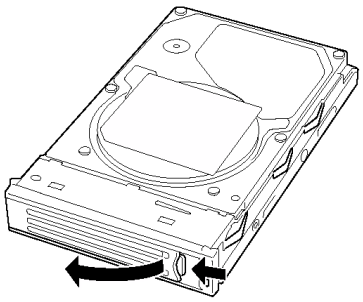
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Locate the slot in which you are going to install a hard disk drive.

 The server has five slots. Install hard disk drives in ascending order of the SCSI ID numbers. The SCSI IDs assigned to the slots are all determined (SCSI ID 0 to ID 4 from right to left).
3. Remove the dummy tray.

IMPORTANT: Keep the dummy tray for future use.



4. Unlock the hard disk drive.



5. Firmly hold the additional hard disk drive (with the tray provided) and handle, and align it so that it engages the guide rails in the slot.

IMPORTANT:

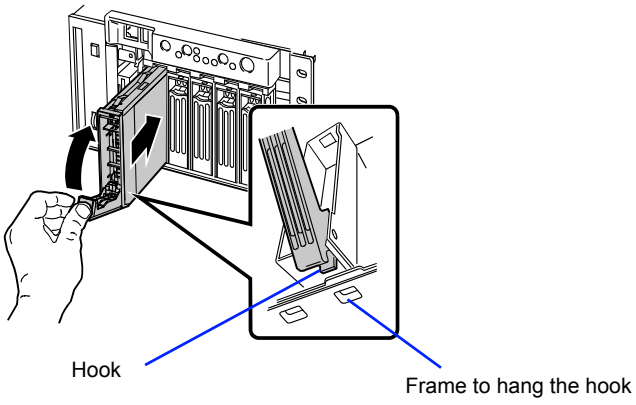
- Push the hard disk drive until the handle hook butts to the frame.
- Carefully hold the hard disk drive with both hands.

6. Slowly lift the handle.

The handle is locked when a "click" is heard.

IMPORTANT: Be careful not to get your finger caught between the handle and tray.

NOTE: Confirm that the handle is hooked to the frame when having inserted the hard disk drive.



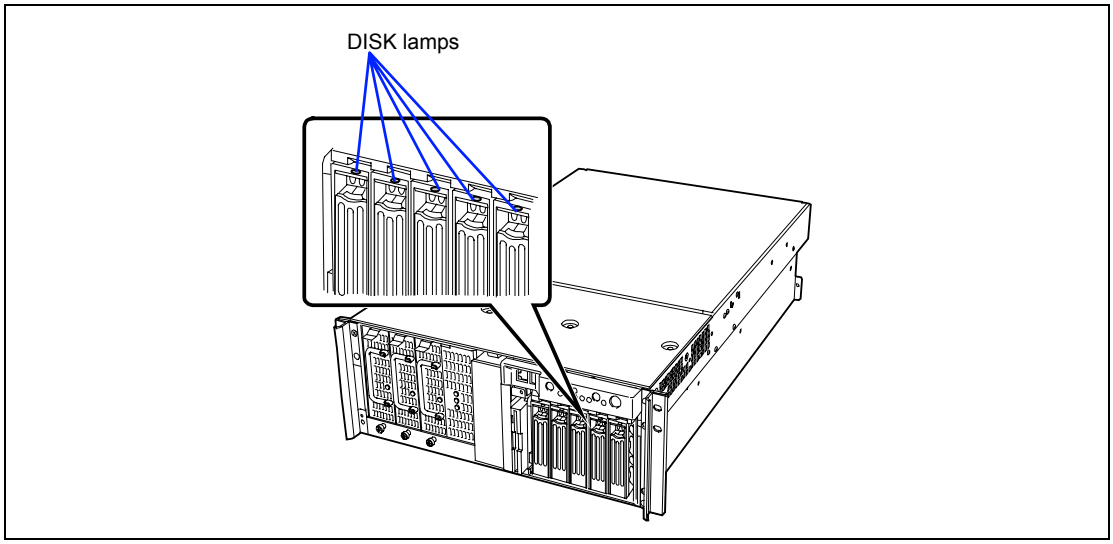
7. Power on the server to check to see that the disk lamp on the front of the hard disk drive goes on (green).

> **IMPORTANT:** If a hard disk is added to the server operating in RAID1 by using the expand array feature, the RAID is automatically changed to RAID0+1. (However, it is not possible to set RAID0+1 directly by using a specific utility.)

Removal

Remove the hard disk in reverse order of the installation steps 1 to 3. To use the server with the hard disk removed, insert a dummy tray into the empty slot.

> **NOTE:** If removing a failing hard disk drive, confirm the slot in which the DISK lamp of the hard disk drive is amber before starting the removal.



When the hard disks are in the disk array configuration, you can restore the state before an error using the auto-rebuild feature that stores the data in the old hard disk into a new one.

The auto-rebuild feature is available for the RAID1, RAID5, or RAID0+1 disk array configuration.

Auto-rebuild is carried out when you hot-swap a failed hard disk with a new one (replace the disk while the server is powered). While auto-rebuild is in progress, the DISK lamp flashes green and amber alternatively to indicate it.

IMPORTANT:

- When auto-rebuild fails, the DISK lamp lights in amber. Remove and install the hard disk again to restart auto-rebuild.
- If the disk array monitoring utility is installed, it may display or act as follows. If the DISK lamp does not light in amber after auto-rebuild, however, auto-rebuild has completed successfully.
 - Displays "Rebuild was cancelled" on the screen while auto-rebuild is in progress.
 - Appears to stop and restart auto-rebuild.

Observe the following notes for auto-rebuild.

- Do not power off the server in the period between a hard disk error and completion of auto-rebuild.
- When you removed a hard disk, wait at least 90 seconds before installing the hard disk back again.
- Do not replace another hard disk while rebuilding is in progress. (The DISK lamp flashes in green and amber alternatively while rebuilding the hard disk.)

Power Supply Unit

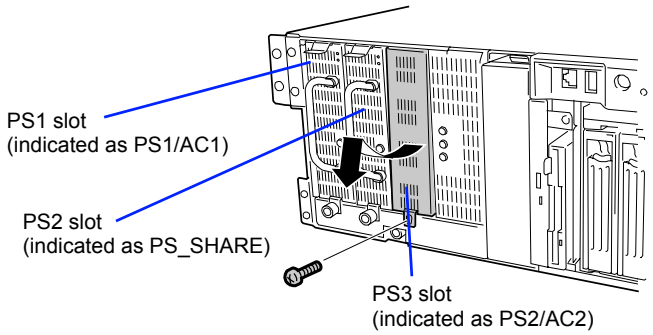
Even if a single power supply unit fails, the server can continue its operation without interruption when additional power supply unit is installed (in the redundant configuration).

Installation

Take the following steps to install a power supply unit:

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Loosen a screw to remove the blank cover.

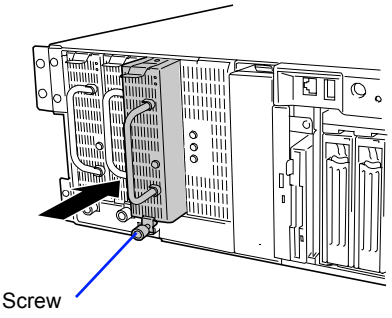
IMPORTANT: Keep the removed blank cover for future use.



3. Slide the power supply unit into the vacant slot until you feel resistance.

IMPORTANT: The power supply unit engaging its connector causes the resistance. To avoid damaging the power supply unit, do not tilt or twist the unit as you push it into the connector.

4. Push the power supply unit into the slot until the locking tab snaps into place.
5. Tighten the captive screw that retains the power supply unit.

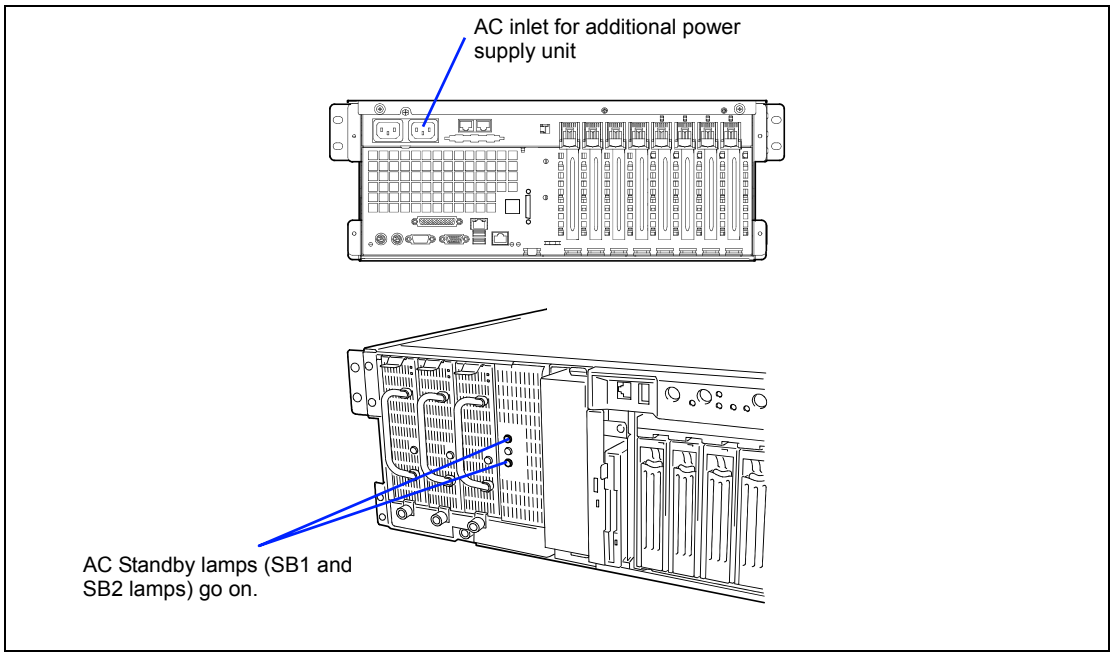


6. Connect two power cords.

Use the power cord provided with the standard power supply unit and the one provided with the optional unit. The AC Standby lamps (the SB1 and SB2 lamps) go on when the power cords are connected.

IMPORTANT:

- Dust cover is attached to the AC inlet 2 connector. Keep the removed dust cover for future use.
- Fasten the power cords with the lock spring.



7. Power on the server.

The POWER lamp on the power supply units goes on. When the server is redundant power supply configuration, AC_R lamp on the front of the server goes on.

8. Confirm, by the STATUS lamp or on the POST diagnostic screen, that there are no errors related to the power supply units.

See Chapter 8 for details on the error messages.

If the POWER lamps are off, reinstall the power supply units. If the POWER lamps are still off, contact your sales representative.

Replacing a Failing Power Supply Unit

Replace only a failing power supply unit.

> **IMPORTANT:** Do not remove a power supply unit operating normally.

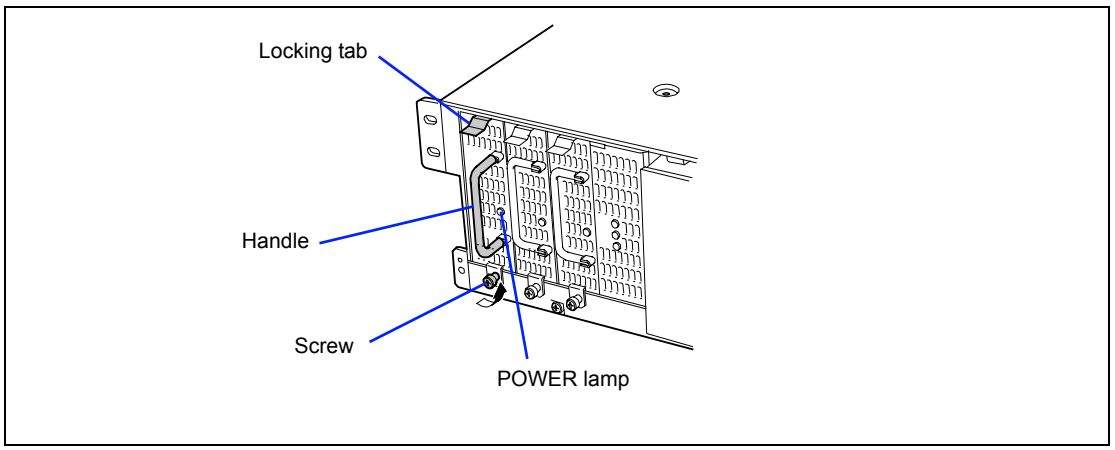
> **NOTE:** If one power supply unit fails while the server contains three power supply units in a redundant configuration, the failing power supply unit can be replaced with the system operating (power-on state). (Skip step 2.)

1. Check the POWER lamp on the power supply unit and determine which unit needs to be replaced.

 The lamp of the failing power supply unit is off.

2. Shutdown the system, and turn off the server.
3. Loosen the captive screw that retains the power supply unit.
4. While pressing down on the locking tab, grasp the handle and carefully pull the power supply unit out of the power supply bay.

> **IMPORTANT:** To avoid damaging the power supply unit, do not tilt or twist the unit as you pull it from the power supply bay. The module disengaging from its connector causes the initial resistance you will feel. Use even, steady force to remove the unit.



5. If you are not going to install a replacement power supply unit, you must install a blank cover you removed in step 2 of installation procedure to vacant slot.

 IMPORTANT: To maintain the cooling effect in the server, install the blank cover in the vacant slot of the power supply bay.

6. Install the new power supply unit taking steps 3 to 7 of "Installation", and confirm that the power supply unit is installed normally.

 NOTE: If one of the three power supply units of the server is replaced while the power is on, the POWER lamp of the new power supply unit goes on. (If it is replaced while the power is off, the lamp goes on after the power is turned on.)

Server ~ Extending from the Rack Cabinet~

The server needs to be pulled out from the rack for installing/removing any components other than the hard disk drives and power supply units.

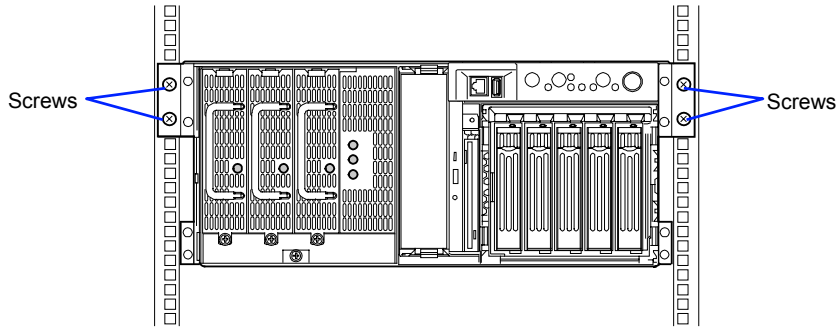
⚠ CAUTION



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not install the server on a rack with leaving covers removed.
- Do not pinch your finger with mechanical components.
- Note high temperature.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.

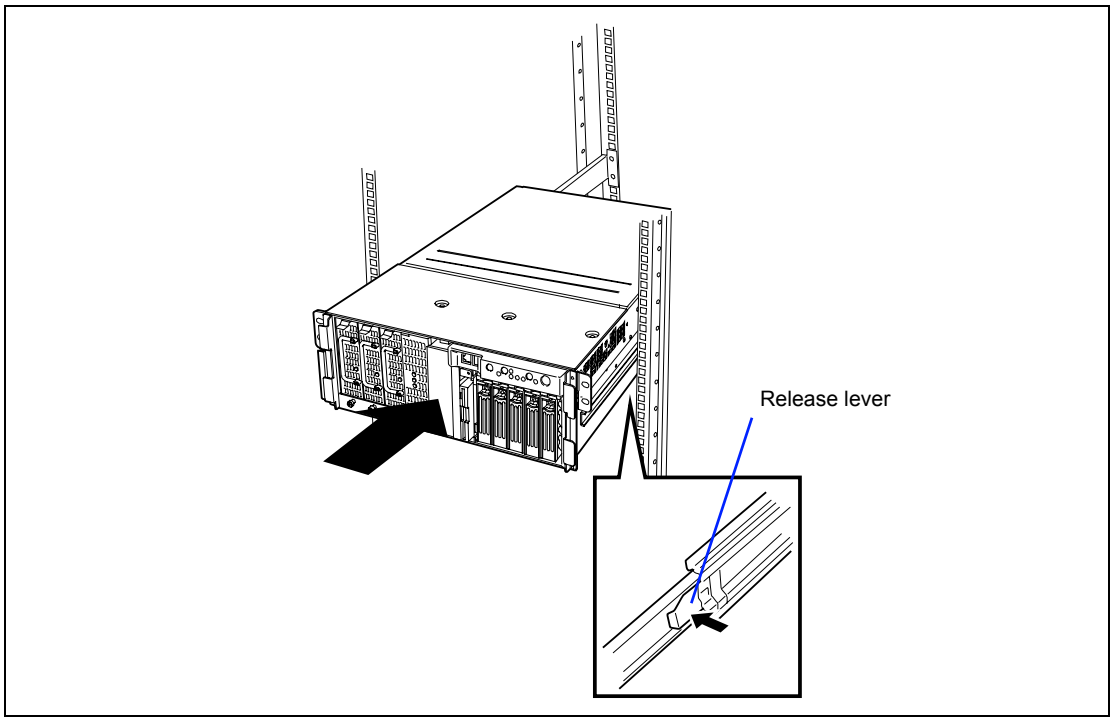
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Loosen the four screws from the front of the server.



3. Hold the flame on the front of the server and slowly pull out the server from the rack.

 The server is latched when a "click" is heard.

When inserting the server back into the rack, push the release levers on the rails on the sides of the server to unlatch the server. Be very careful not to get your finger caught in doing so.



IMPORTANT: Push the release lever using a screwdriver or the like. Pushing the lever with your finger may hurt your finger.

Front Access Cover

To install or remove devices in the 5.25-inch device bay, you will need to remove the front access cover.

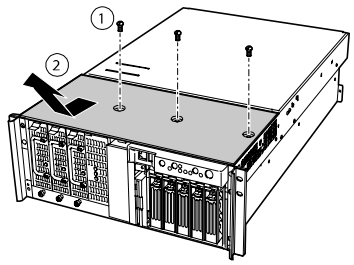
⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not install the server on a rack with leaving covers removed.

Removal

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack cabinet.
3. Remove the three screws.
4. While lightly pressing down on the cover, slide it toward the front of the server.
5. Lift the cover up and off of the server.



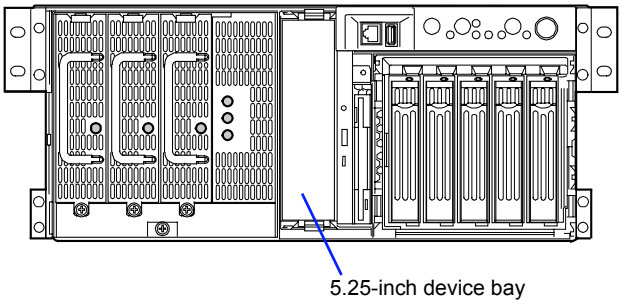
Installation

IMPORTANT: Before installing the front access cover, check that you have not left tools or loose parts inside the system.

1. Position the cover on the chassis so that the cover tabs align with the chassis slots.
2. While lightly pressing down on the cover, slide it toward the rear of the chassis until the cover tabs fully engage the chassis slots.
3. Attach the cover to the chassis with the three screws removed earlier.

5.25-inch Peripheral Device

The server has one slot for installing a backup device such as a magnetic tape drive.



Installation Considerations

The server can contain a single-height SCSI device or IDE device.

- **SCSI device**

 Set SCSI IDs to ID0 - ID6 when you connect the device with the Ultra 320 (B) connector on the baseboard. The termination setting should be "invalid."

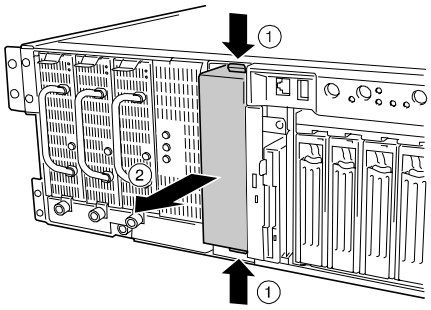
- **IDE device**

 Connect the IDE device to the unused connector of standard CD-ROM drive cable. Set the device as "Slave" using the jumper pin of the device. Refer to the manual coming with the IDE device for details.

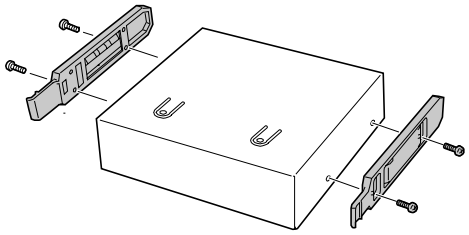
Installation

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Open the front access cover.
4. Remove the drive from its protective wrapper and place it on an antistatic surface.
5. Record the new drive model and serial numbers in your equipment log.
6. Set any jumpers or switches on the new drive according to the drive manufacturer's instructions.

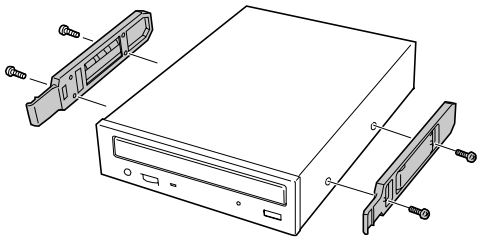
7. While pressing the locking tabs on the both sides of the dummy cover, pull the dummy cover out of the server.



8. Remove the screws securing the latching rails mounted on the dummy cover.

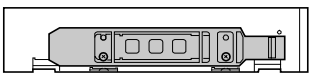


9. Tighten the two mounting screws coming with the server to secure a latching rail to each side of the drive.



IMPORTANT:

- Use the bottom raw screw holes on the latching rail (see figure below).
- Always use the screws coming with the server. Using longer screws or those of different diameter may cause the device to be broken.



10. Position the drive with the left side lower so that the latching rails engage the guide rails in the 5.25-inch device bay.

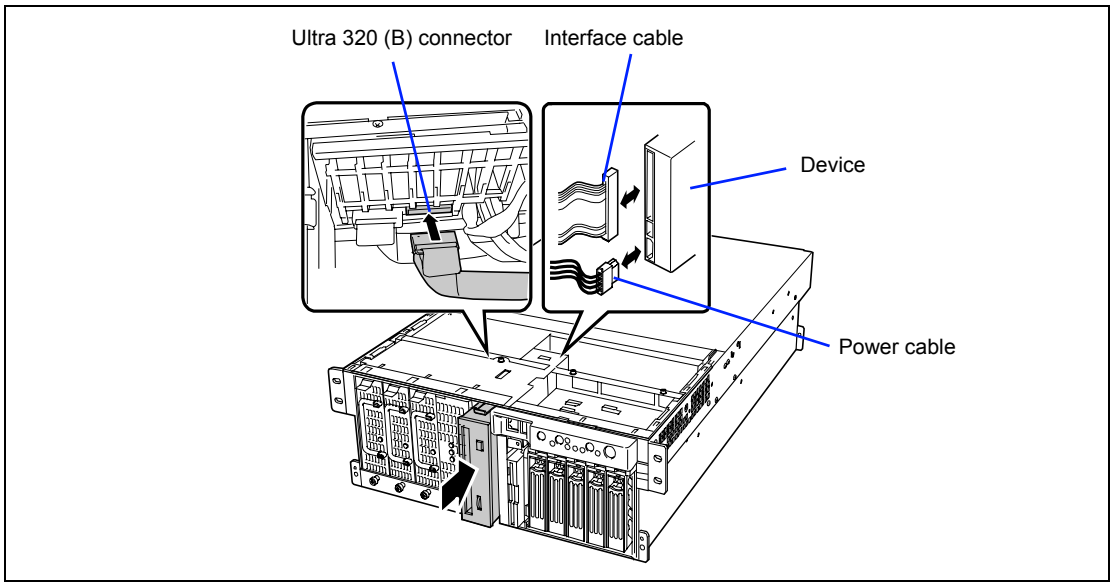
Push the drive into the bay until the latching rails lock in place.

11. Connect the signal and power cables to the drive. You can insert the keyed connectors only one way.

IMPORTANT:

- The built-in SCSI cable previously has wide-narrow conversion connector. Remove the wide-narrow conversion connectors from the SCSI cable and connect the SCSI connector appropriate for the devices if the 5.25-inch device has 68-pin SCSI connector. Keep the removed wide-narrow conversion connector carefully.
- Connector pin bending or incomplete connection may cause a malfunction to occur. Provide the connection securely watching the 5.25-inch device and cable connectors.
- Connector cover is attached to the power cable. Keep the removed connector cover for future use.

NOTE: Make sure that the cables are not caught while the 5.25-inch device is pushed into the slot.



12. Install the components you removed previously.

13. Make the setup according to "SCSI BIOS" in Chapter 4.

Removal

Remove the device in reverse order of the installation steps.

IMPORTANT:

- To remove a cable from the signal connector, pull out the cable with holding the pull-tab on the cable connector. Pulling out the cable with holding the cable may make some pins bent and/or some internal wires disconnected. This may cause a malfunction to occur
- If you leave the 5.25-inch device bay empty, install a dummy cover on the bay for proper cooling and airflow. Installing a device in the bay or covering the bay with a dummy cover protects the System EMI integrity and cooling. When you install a drive, save the dummy cover to reinstall if you should later remove the drive and not reinstall one in the same bay.

Rear Access Cover

The rear access cover provides access to the hot-swap fans and to the electronics bay that contains PCI add-in cards and the baseboard.

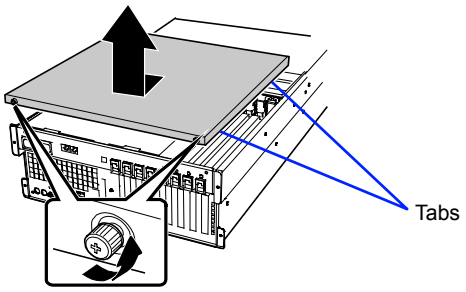
⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not install the server on a rack with leaving covers removed.

Removal

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Loosen the captive screws located on the rear edge of the cover.
4. While lightly pressing down on the cover, slide it toward the rear of the chassis.
5. Lift the cover up and off of the chassis.



Installation

IMPORTANT: Before installing the rear access cover, check that you have not left tools or loose parts inside the system.

1. Position the cover on the chassis so that the cover tabs align with the chassis slots.
2. While lightly pressing down on the cover, slide it toward the front of the chassis until the cover tabs fully engage the chassis slots.
3. Attach the cover to the chassis with the captive screws located on the rear edge of the cover.
4. Reinstall the removed components.

CPU Access Cover

The CPU access cover provides access to the electronics bay that contains PCI add-in cards and the server board set such as a memory board, processor board.

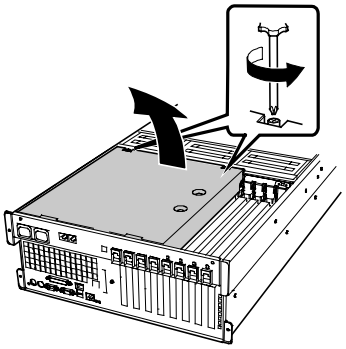
⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not install the server on a rack with leaving covers removed.

Removal

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the rear access cover.
4. Loosen the two captive screws located on the front of the CPU access cover.
5. Lift the end of the cover where the screws are located and remove the cover.



Installation

Follow these steps to install the CPU access cover.

1. Orient the access cover with the captive screws toward the front of the server.
2. Insert the tabs on the rear of the cover into the slots at the rear of the chassis.
3. Press down gently and tighten the captive screws at the front of the cover.
4. Reinstall the removed components.

PCI Board

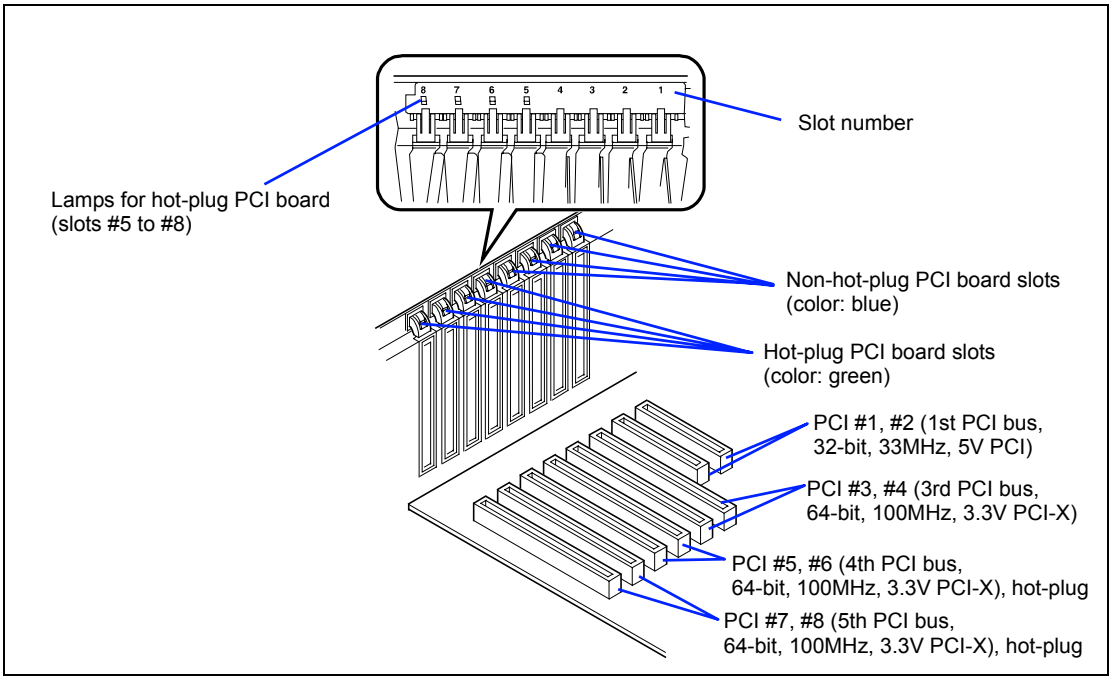
The server contains eight slots into which PCI boards can be inserted.

Some PCI boards support the hot-plug function by which they may be installed or removed with the power of the server being on. Your server supports the hot-plug function. The PCI boards supporting the hot-plug function only include the N8104-111 100BASE-TX Adapter and the N8103-103 1000BASE-T Adapter.

IMPORTANT:

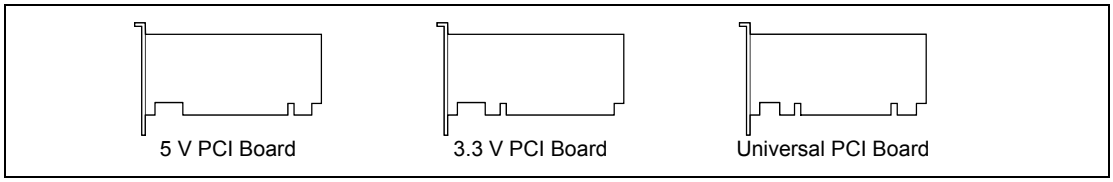
- The PCI board is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the PCI board. Do not touch the PCI board terminals or on-board parts by a bare hand or place the PCI board directly on the desk. For static notes, see the section "Anti-static Measures".
- Be sure any empty expansion slots have a slot cover installed. An open expansion slot reduces the cooling and EMI integrity of the server and can affect performance and cause damage due to overheating.

NOTE: The tab on the PCI board slot indicates hot-plug or non-hot-plug by its color. Hot-plug slot has the green tab (PCI slot #5 through #8), and non-hot-plug slot has the blue tab (PCI slot #1 through #4).



There are three types of PCI boards: 5V PCI boards, 3.3V PCI boards, and universal PCI boards.

A 5V PCI board must be installed in the 5V PCI slot, and a 3.3V PCI board must be installed in the 3.3V PCI slot. A universal PCI board can be installed in any PCI slot.



RAID Controller Considerations

Note the following on the configuration of a disk array.

- To change the disk array configuration or the RAID, the hard disks must be initialized. If important data is saved in the hard disks used to constitute a disk array, first back up the data in other hard disks before installing boards and configuring the disk array.
- More than one hard disk is required to configure a disk array.
- Hard disks used in the disk array configuration should have the same disk revolution rate and capacity in packs.
- See table in the next page for the slot in which a board can be installed.
- Up to four disk array controller boards can be installed in the server.
- Several RAID (Redundant Arrays of Inexpensive [Independent] Disks) levels can be set for the disk array configuration in the server in which disk array controller boards are installed. Refer to the documentation coming with the disk array controller for details of the available RAIDs, data transfer rate, and array configuration.
- The available capacity of the hard disks in the disk array configuration is lower than the total capacity of the hard disks configuring the disk array while the disk reliability is improved (for RAID 1, 5, or 0+1).
- Set "Option ROM Scan," a parameter of the slot in which a hard disk is installed, to "Enable" in "PCI Configuration" on the Advanced menu of the BIOS utility SETUP.
- Replacement of disk array controller board

 Back up the disk array configuration information in the disk array controller board to the floppy disk and restore it to the replaced disk array controller board. Use the configuration utility for the restoration. Refer to the manual that comes with the disk array controller for details. If a disk array controller is replaced, create the configuration information newly by using the proper utility.
- When more than one disk array controller board are installed in the server, install the disk array controller board to which the system disk is connected in the PCI slot having the highest boot priority (from PCI #1 to #8). For example, if four disk array controller boards are installed in PCI slots #3 to #6, the system disk should be connected to the board installed in PCI slot #3.
- Standard Network
 An AFT/ALB teaming is unavailable in standard network (between onboard controllers). An AFT/ALB teaming with standard network and an option LAN board is also unavailable.

List of Optional Devices and their Available Slots

The following table shows the cards supported by this server and the available slots:

N Code	Product name		PCI		PCI-X					
			#1	#2	#3	#4	#5	#6	#7	#8
			32-bit/33 MHz		64-bit/100 MHz					
		Profile	Full-height							
		Voltage	5 V		3.3 V					
		Board size	Long/Short							
		Hot-plug	Non-hot-plug		Hot-plug					
N8103-65F	SCSI controller		√	√	√	√	√	√	√	√
N8503-56F	SCSI controller		√	√	√	√	√	√	√	√
N8103-81F	Disk array controller*1		–	–	√	√	√	√	√	√
N8104-103	1000BASE-T adapter*2		–	–	√	√	√	√	√	√
N8104-111	100BASE-TX adapter*3		√	√	√	√	√	√	√	√
N8104-86	100BASE-TX adapter*4		√	√	√	√	√	√	√	√

√: Can be installed. –: Cannot be installed.

*1 Up to 4 cards can be installed.

*2 Up to 2 cards (up to 4 cards for AFT/ALB) can be installed.
Supports hot-plug feature.

*3 Supports hot-plug feature. Up to 5 cards can be installed.

*4 Up to 2 cards can be installed.

Onboard LAN Controller Considerations

It is impossible to configure the Teaming function of AFT(Adapter Fault Tolerance)/ALB (Adaptive Load Balancing) in a standard network controller (on board LAN controller).

And it is also impossible to configure the Teaming function of the same AFT/ALB on a standard network controller and an optional LAN board.

Non-hot-plug PCI Boards

This section describes the procedure of installing or removing a PCI board not supporting the hot-plug function from a PCI board slot.

Installation

Install a board connected to a PCI board slot in the following procedure. Take the following steps to install a PCI board on the riser card:

IMPORTANT:

- PCI board slots #3 to #8 can accept 3.3V and universal PCI boards.
- PCI board slots #1 and #2 can accept 5V and universal PCI boards.

NOTES:

- When a PCI board is installed, make sure that the terminal section of the board securely mates with the connector of the PCI board slot.
- The insulators are installed between the PCI board slots. They are for protecting the PCI board already been installed. Take care not to remove or damage the insulator when installing or removing the PCI board. If the insulator is taken off, reinstall the insulator in place.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.

 IMPORTANT: To avoid damage to the system and devices, always turn off the system before installing the non-hot swap board.

2. Pull out the server from the rack.
3. Remove the rear access cover.
4. Remove the CPU access cover.

 You can ignore this step when installing the board to the PCI slots #5 to #8.
5. Define the slot in which a board is installed.
6. Press the retention tab at the tip of the additional slot cover to unlock and open the tab.

 IMPORTANT: Do not open the retention tab to 90 degrees or more. Doing so could damage the tab.

7. Remove the expansion slot cover.

IMPORTANT: Keep the expansion slot cover being removed carefully.

8. Remove the dust cover.

IMPORTANT: Keep the dust cover being removed carefully.

9. On the edge opposite the connectors, grasp the board by both corners. Orient the board to the vacant hot-plug slot so that the metal retention bracket is toward the rear of the chassis.

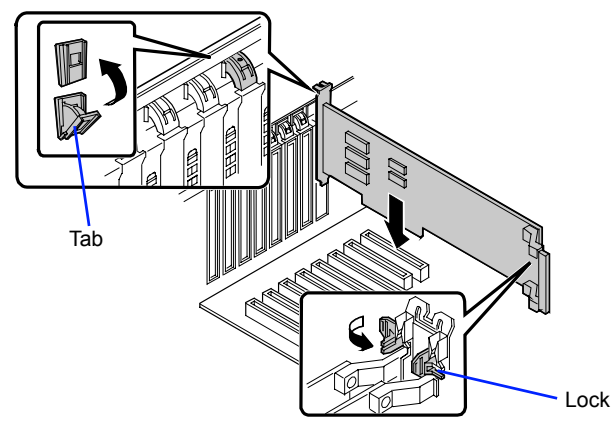
10. Insert the board into the front and rear retention mechanisms. Carefully push the board until it engages and fully seats in the slot connector.

IMPORTANT: If the board cannot be installed easily, remove the board once and then reinstall it. Excess force added to the board may cause the board to be broken.

11. Close the front and rear latches.

NOTES:

- Make sure that the tab is firmly locked. If the tab is unlocked, the PCI slot does not operate normally since the power is not supplied to the PCI slot.
- The insulators are installed between the PCI board slots. They are for protecting the PCI board already been installed. Take care not to remove or damage the insulator when installing or removing the PCI board. If the insulator is taken off, reinstall the insulator in place.



12. Reinstall the removed components.

13. Turn on the power of the server. Then make sure that any error message does not appear in POST.

 If an error message appears, write down the message and review the error message list in Chapter 8.

14. Start the BIOS Setup Utility to set the "Reset Configuration Data" in the "Advanced" menu to "Yes."

 This is required to update the hardware configuration information. See Chapter 4 for details.

Removal

Remove the board in the reverse procedure of the installation. Then install the connector cap and additional slot cover.

Hot-plug PCI Board

On the PCI board slots #5 through #8, you can replace or add a hot-plug PCI board while the server is operating.

Only N8104-111 100BASE-TX Adapter and N8104-103 1000BASE-T Adapter support the Hot-plug PCI feature.

The PCI hot-plug function includes the following functions:

- Hot Add
 Use Hot Add to install a Hot Plug PCI board while the server is operating.
- Hot Remove
 Use Hot Remove to remove a Hot Plug PCI board while the server is operating.
- Hot Replace
 Use Hot Replace to replace a Hot Plug PCI board while the server is operating.

IMPORTANT:

- Before removing a PCI board, be sure to stop the driver of the slot (containing the PCI board) from the operating system (Windows 2000). Failure to do so may cause the system to fail.
- For Windows 2000 server, do not use a function in inactive state after executing the PCI Hot-plug function. The system fails to return to the original state when a function in inactive state is restarted.
- Use the BIOS Setup utility to set the following before executing the PCI Hot Plug function:
 Select [Advanced] → [PCI Configuration] → [Hot-plug PCI Control] → [Reserving memory space for PHP] → Select memory space for installed board*[1].
 Select [Advanced] → [PCI Configuration] → [Hot-plug PCI Control] → [Empty Bus Default Speed] → Select the frequency for installed board*[2]
 *1 If this menu is set to other than "Disabled," the memory capacity appears to be less than the actually installed memory capacity.
 *2 An appropriate parameter of the installed board is applied to the slot by the system after installing the board and rebooting the system.
- To execute the PCI Hot-plug function, be sure to login the system as Administrator.
- The board available for the hot addition varies depending on the clock rate previously set by PCI slots #5 and #6 or #7 and #8. Set the clock rate depending on the used PCI board appropriately referring to the description on the next page to use the BIOS Setup Utility. If a PCI board operating at a different clock rate is subject to the hot addition, the PCI slot fault lamp goes on and the hot plug cannot be done correctly. However, restarting the system allows BIOS to ignore the setting value and automatically operate the system with the optimum setting.
 [Advanced] → [PCI Configuration] → [Hot-plug PCI Control] → [Empty bus Default Speed]

Requirements for Hot Add

- **No boards installed in the same bus**

BIOS setting		Description
Clock speed	PCI 33 MHz	PCI boards operating at any kind of clock speed available for Hot Add (However, boards operating at over 66 MHz will operate at 33 MHz.)
	PCI 66 MHz	PCI boards operating at either PCI-66MHz or PCI-X 66MHz/100MHz available for Hot Add (However, boards operating at PCI-X 66MHz/100MHz will operate at PCI 66MHz)
	PCI-X 66 MHz	PCI boards operating at PCI-X 66MHz/100MHz available for Hot Add (However, boards operating at PCI-X 100MHz will operate at PCI-X 66MHz)
	PCI-X 100 MHz	Only PCI boards operating at PCI-X 100 MHz available for Hot Add Provide Hot Add for PCI boards operating at the same clock.

- **PCI boards installed on the same bus**

 Provide Hot Add for PCI boards operating at the same clock.

Status Lamps

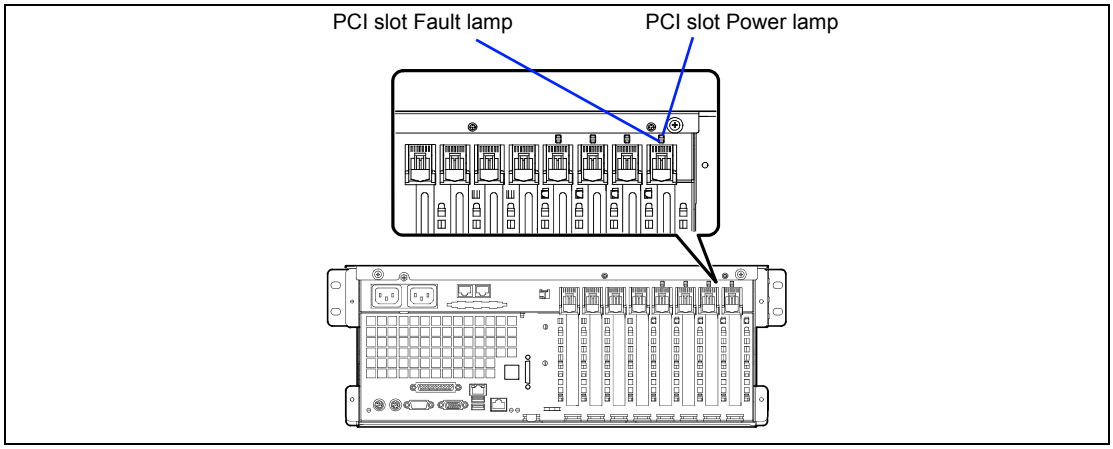
Four pair of LED indicators on the back panel of the electronics bay indicates the status of the hot-plug PCI add-in boards.

- **PCI slot Power lamp (green)**

 Lights when power is supplied normally to the PCI board installed.

- **PCI slot Fault lamp (amber)**

 Lights when an error occurs on PCI board or the slot connecting the PCI board.



Hot Add

Take the following procedure to execute Hot Add:

1. Pull out the server from the rack with the power being on.
2. Remove the rear access cover.
3. Locate the slot in which you are going to install an additional board.

 NOTE: Confirm that the PCI Slot Power lamp of the slot in which you are going to install the PCI board is off.

4. Push the tab at the tip of the additional slot cover of the slot in which you are going to install the PCI board to unlock the tab. Open the tab.

 IMPORTANT: Do not open the retention tab to 90 degrees or more. Doing so could damage the tab.

5. Remove the expansion slot cover.

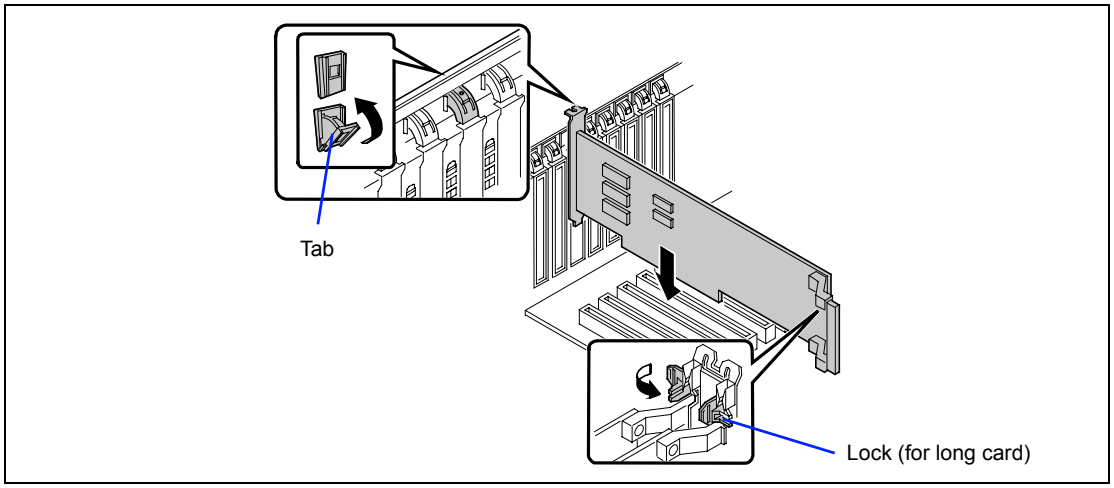
 IMPORTANT: Keep the removed expansion slot cover in a designated place.

6. Remove the dust cover.

 IMPORTANT: Keep the removed dust cover in a designated place.

7. Push the PCI board until the correction part of the board is firmly connected into the slot.

 IMPORTANT: If failing to install the PCI board correctly, reinstall it. Be careful not to apply excess force to the PCI board when handling it. Applying excess force may cause damage to the PCI board.



NOTES:

- The insulators are installed between the PCI board slots. They are for protecting the PCI board already been installed. Take care not to remove or damage the insulator when installing or removing the PCI board. If the insulator is taken off, reinstall the insulator in place.
- After installed the long board, secure it with the lock on the upper part of the guide rail.

8. Connect the cables to the PCI board while firmly holding the PCI board with your hand.

9. Slowly close the tab to secure the PCI board. The PCI Slot Power lamp flashes once and then, goes on.

NOTES:

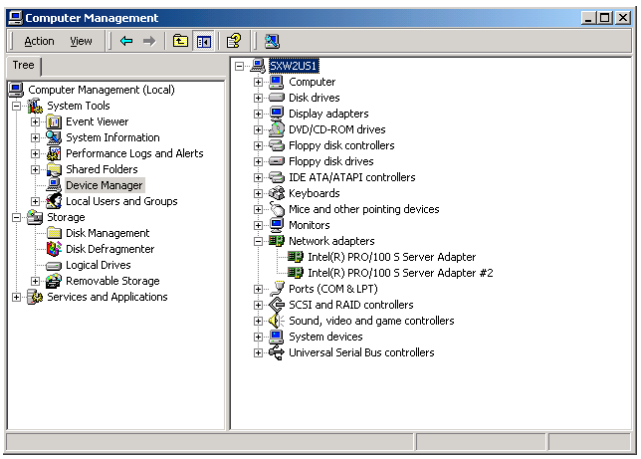
- If the server runs on Windows Server 2003 or Windows 2000, the operating system automatically recognizes the additionally installed PCI board and installs the driver.
- If an error occurred in the installed board or slot, the PCI Slot Fault lamp goes on (amber).
- Be sure to close the tab slowly and correctly. Abruptly closing the tab may cause the system to fail to recognize the PCI board.

10. Reinstall the rear access cover and place the server into the rack.

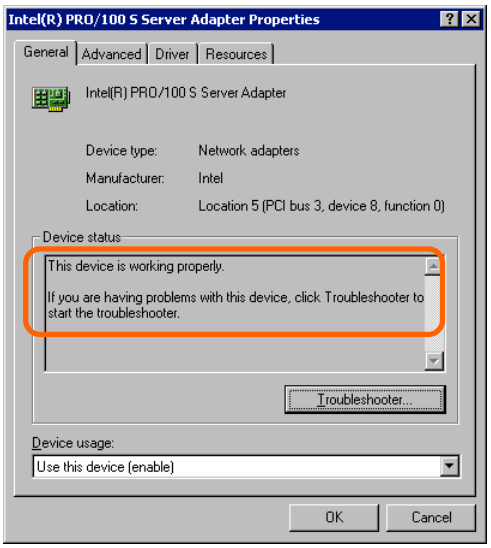
11. Take the following steps to check if the additionally installed PCI board is recognized and operating properly:

(1) Select [Control Panel], [Administractive Tools], [Computer Management], and [Device Manager] in the order to start the Device Manager.

(2) Move the cursor to the added board.



(3) Display the [General] dialog in the property to confirm that the device is normally operated.



* The message in the "property" depends on the location of the PCI board slot.

Hot Remove

Take the following procedure to execute Hot Remove:

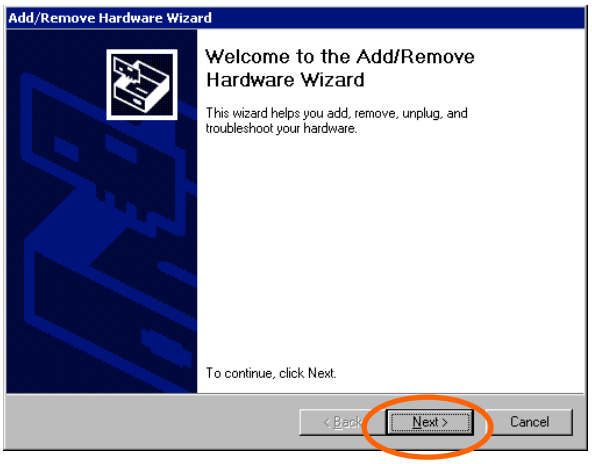
1. Take the following steps to stop the device driver used by the Hot-plug PCI board you want to remove:

> **IMPORTANT:** Before removing a PCI board, be sure to stop the driver of the slot (containing the PCI board) from the operating system. Failure to do so may cause the system to fail.

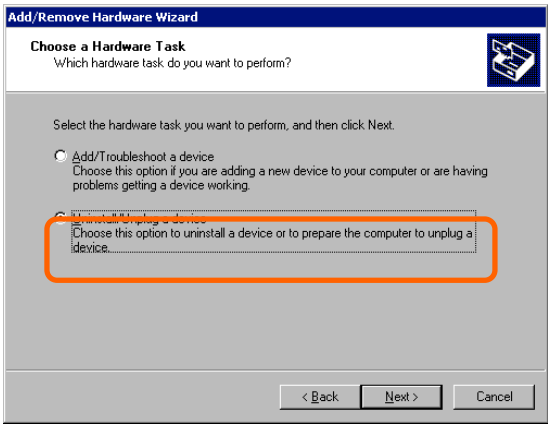
(1) Open [Add/Remove Hardware] in [Control Panel].

The [Add/Remove Hardware Wizard] starts.

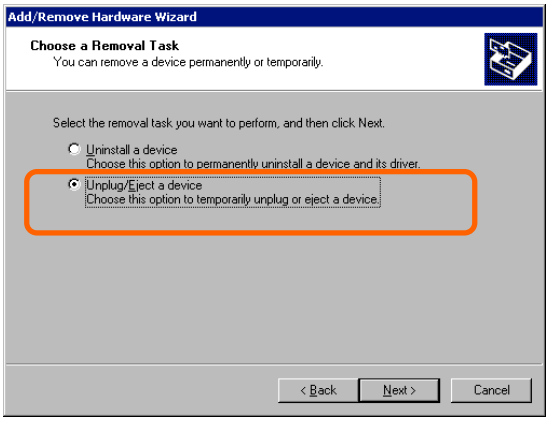
(2) Click on [Next].



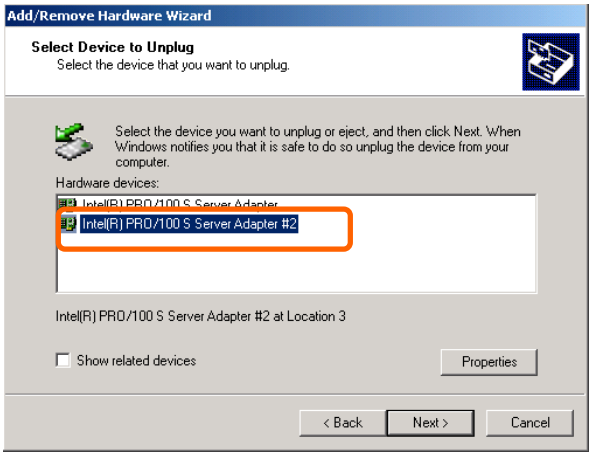
(3) Select [Uninstall/Unplug a device] for hardware task, then click on [Next].



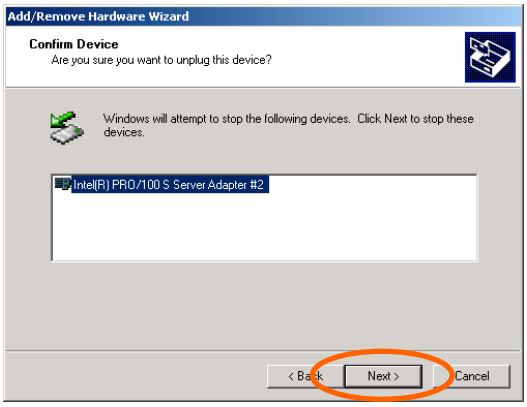
(4) Select [Unplug/Eject a device] for removal task, then click on [Next].



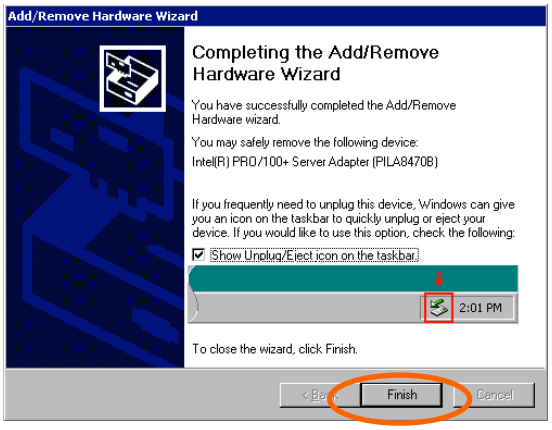
(5) Select the target device, then click on [Next].



(6) Confirm that the driver is used by the device you want to remove, then click on [Next].
The [Add/Remove Hardware Wizard] terminates.



(7) Click on [Finish].



2. Pull out the server from the rack with the power being on.

3. Remove the rear access cover and locate the board to be removed.

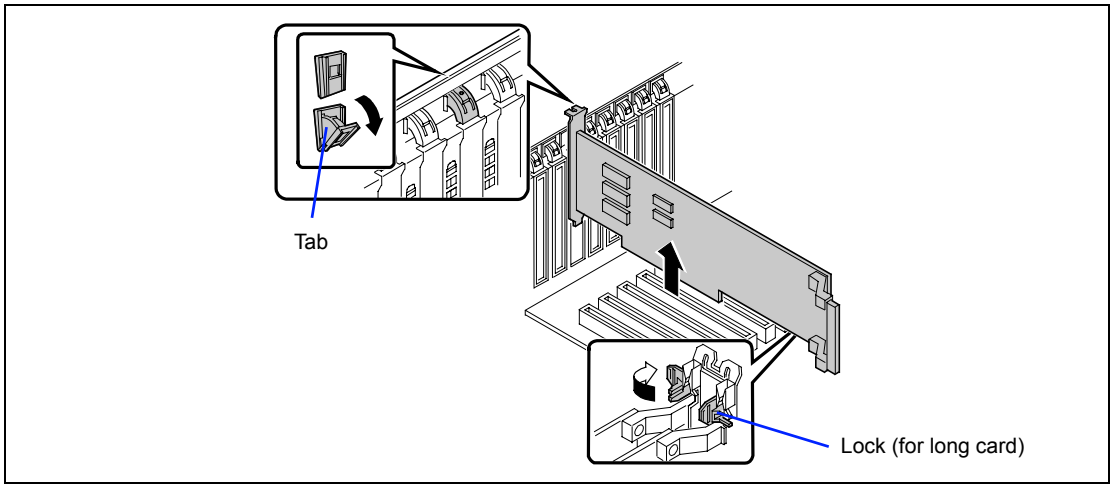
> **NOTE:** Confirm that the PCI Slot Power lamp of the target PCI slot is off and that the PCI Slot Fault lamp is flashing.

4. Disconnect all the cables from the PCI board.

5. Push the tab to unlock it, slowly open the tab, then remove the PCI board.

IMPORTANT: Do not open the retention tab to 90 degrees or more. Doing so could damage the tab.

NOTE: The insulators are installed between the PCI board slots. They are for protecting the PCI board already been installed. Take care not to remove or damage the insulator when installing or removing the PCI board. If the insulator is taken off, reinstall the insulator in place.



6. Install the dust cover and expansion slot cover on the slot from which you remove the PCI board, then slowly close the tab.

NOTE: Confirm that the PCI Slot Power lamp blinks once, and that the PCI Slot Fault lamp is off. If the PCI Slot Fault lamp is on, open and close the tab again.

IMPORTANT: To maintain the dust-proofing and electromagnetic radiation characteristics and cooling performance of the server, be sure to install the dust cover and the expansion slot cover on the slot from which you removed the PCI board.

7. Reinstall the rear access cover and place the server into the rack.

Hot Replace

Take the following procedure to execute the Hot Replace:

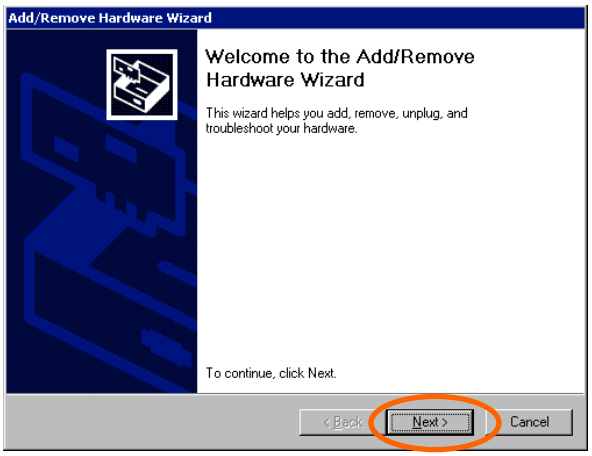
1. Take the following steps to stop the device driver used by the Hot Plug PCI board you want to replace:

> **IMPORTANT:** Before removing a PCI board, be sure to stop the driver of the slot (containing the PCI board) from the operating system. Failure to do so may cause the system to fail.

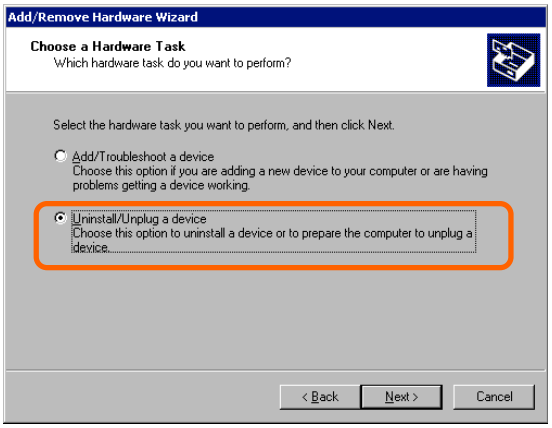
(1) Open [Add/Remove Hardware] in [Control Panel].

The [Add/Remove Hardware Wizard] starts.

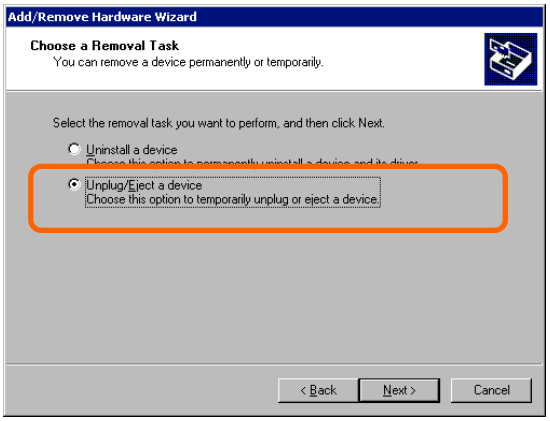
(2) Click on [Next].



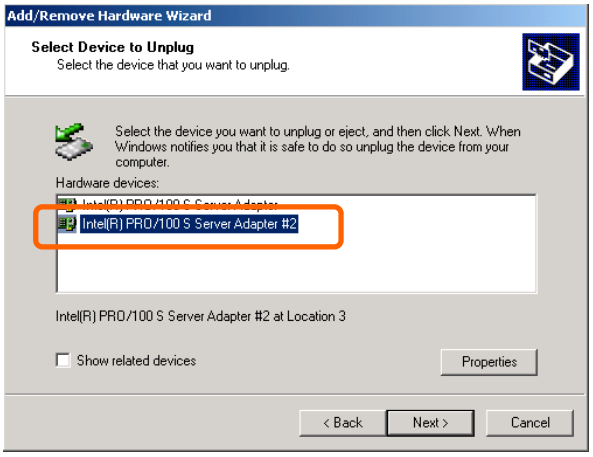
(3) Select [Uninstall/Unplug a device] for hardware task, then click on [Next].



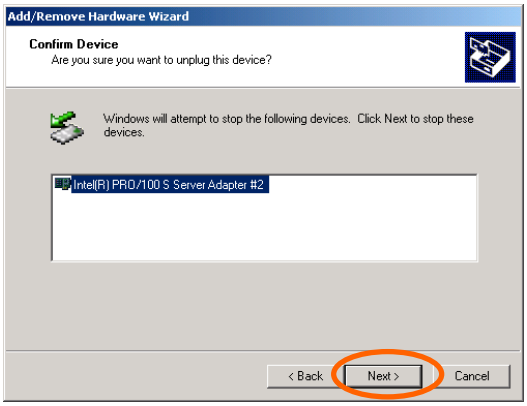
(4) Select [Unplug/Eject a device] for removal task, then click on [Next].



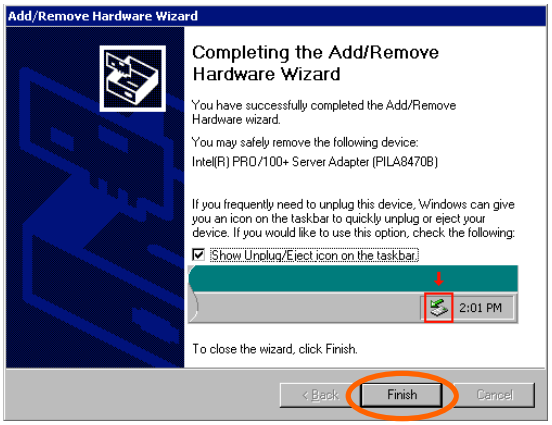
(5) Select the target device, then click on [Next].



(6) Confirm that the driver is used by the device you want to remove, then click on [Next].
The [Add/Remove Hardware Wizard] terminates.



(7) Click on [Finish].



2. Pull out the server from the rack with the power being on.

3. Remove the rear access cover and locate the board to be removed.

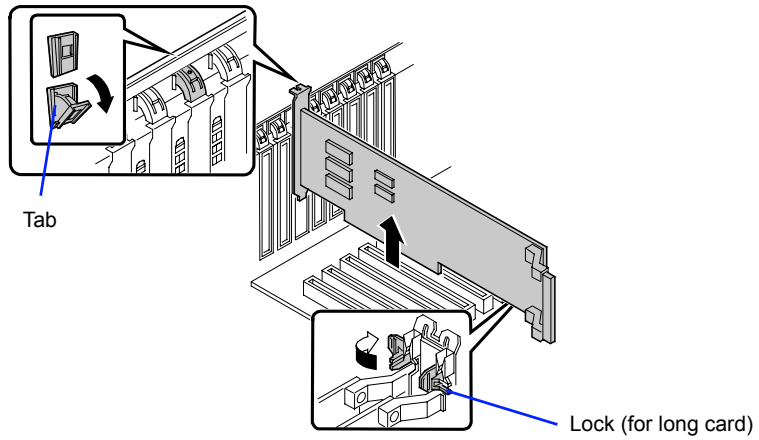
> **NOTE:** Confirm that the PCI Slot Power lamp of the target PCI slot is off and that the PCI Slot Fault lamp is flashing.

4. Disconnect all the cables from the PCI board.

5. Push the tab to unlock it, slowly open the tab, then remove the PCI board.

IMPORTANT: Do not open the retention tab to 90 degrees or more. Doing so could damage the tab.

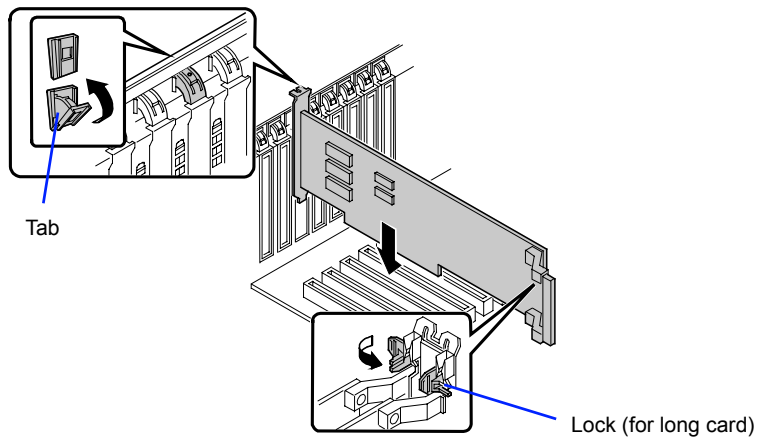
NOTE: The insulators are installed between the PCI board slots. They are for protecting the PCI board already been installed. Take care not to remove or damage the insulator when installing or removing the PCI board. If the insulator is taken off, reinstall the insulator in place.



6. Slowly insert the PCI board into the server.

7. Push the PCI board until the correction part of the board is firmly connected into the slot.

IMPORTANT: If failing to install the PCI board correctly, reinstall it. Be careful not to apply excess force to the PCI board when handling it. Applying excess force may cause damage to the PCI board.



8. Connect the cables to the PCI board while firmly holding the PCI board with your hand.

9. Slowly close the tab to secure the PCI board. The PCI Slot Power lamp flashes once, and then goes on.

NOTES:

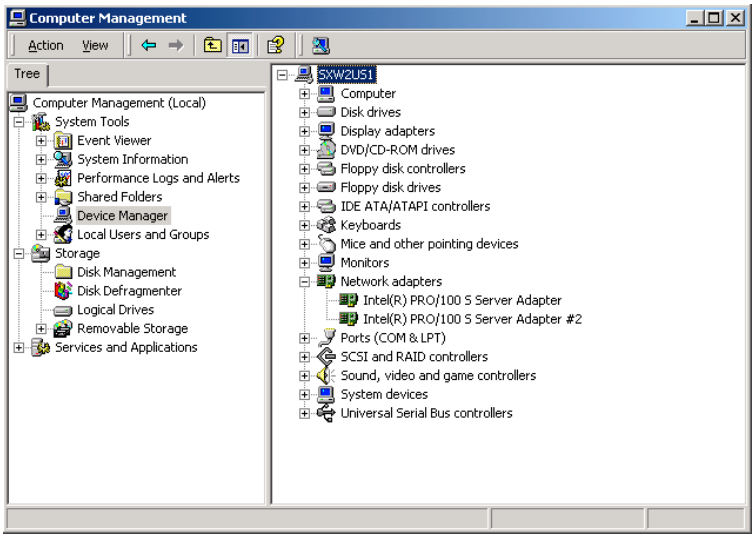
- If the server runs on Windows 2000, the operating system automatically recognizes the additionally installed PCI board and installs the driver.
- If an error occurred in the installed board or slot, the PCI Slot Fault lamp goes on (amber).
- Be sure to close the tab slowly and correctly. Abruptly closing the tab may cause the system to fail to recognize the PCI board.

10. Reinstall the rear access cover and place the server into the rack.

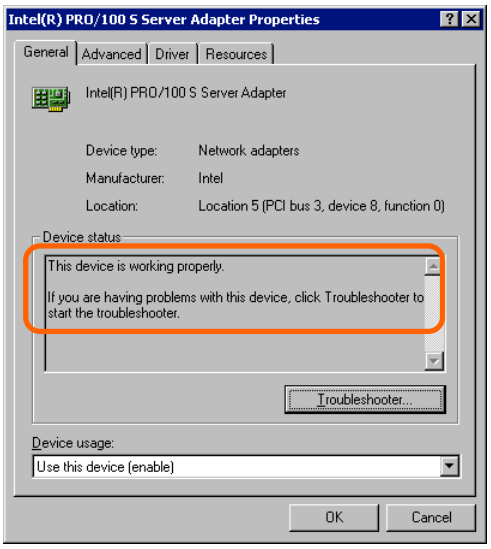
11. Take the following steps to check if the additionally installed PCI board is recognized and operating properly:

(1) Select [Control Panel], [Administractive Tools], [Computer Management], and [Device Manager] in the order to start the Device Manager.

(2) Move the cursor to the added board.



(3) Display the [General] dialog in the property to confirm that the device is normally operated.



* The message in the "property" depends on the location of the PCI board slot.

Memory Board

To install or remove the DIMM, remove the memory board first.

> **NOTE:** Up to 24GB of memory (2GB DIMM × 12) can be installed. (The DIMMs installed as standard need to be replaced in this case.) A DIMM of 256MB is installed in DIMM slots #1 to #4 at shipment.

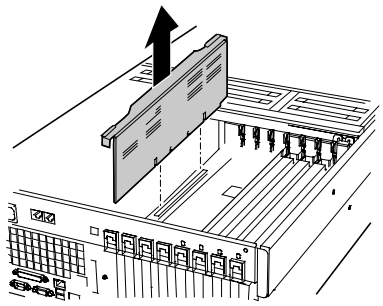
Removal

Remove the memory board in the following procedure.

> **IMPORTANT:** The memory board is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the memory board. Do not touch the memory board terminals or on-board parts by a bare hand or place the memory board directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the rear access cover.
4. Remove the CPU access cover.
5. Hold the both edges (blue marking) of the memory board and gently lift the memory board out of the chassis.

> **IMPORTANT:** To avoid damaging the memory board and DIMM, do not tilt the board while lifting up from the system.



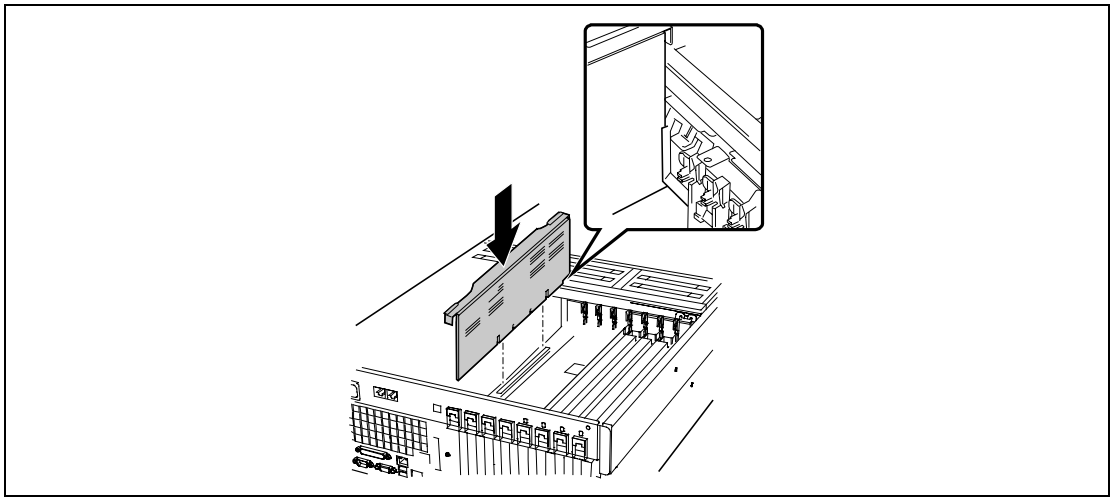
6. Place the memory board on a dry, clean, and static-free place.

Installation

Install a memory board in the following procedure.

1. Hold the both edges (blue marking) of the memory board.
2. Insert the memory board into the guides at both ends of the electronics bay.
3. Align the board with the connector on the processor board and press down on the board until it is fully inserted into the connector.

IMPORTANT: To avoid damaging the memory board and DIMM, do not tilt the board while pressing down to the system.



4. Reinstall the removed components.

DIMM

Install the additional DIMM (Dual Inline Memory Module) to the DIMM socket on the baseboard in the server. The memory board is provided with 12 DIMM board slots.

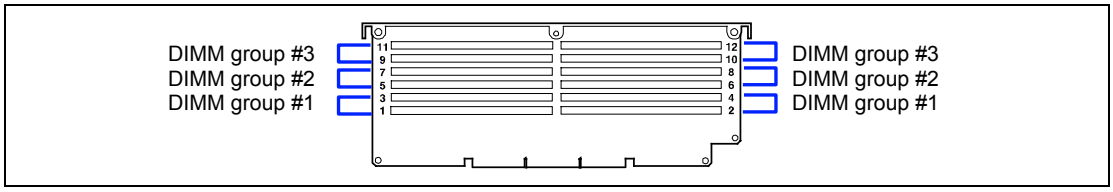
The memory board contains 12 sockets in which DIMMs are installed. Four 256MB DIMMs are normally installed in DIMM group #1. (The DIMMs normally installed may be replaced.)

DIMMs are installed on the sockets in the ascending order of DIMM socket numbers in the unit of four modules.

NOTE: Up to 24GB of memory (2GB DIMM x 12) can be installed.

IMPORTANT:

- The DIMM is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the DIMM. Do not touch the DIMM terminals or on-board parts by a bare hand or place the DIMM directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- Make sure to use the DIMM authorized by NEC. Installing a third-party DIMM may cause a failure of the DIMM as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.



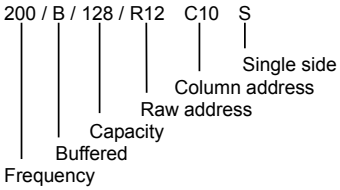
Installation

Install a DIMM in the following procedure.

IMPORTANT: Install four additional DIMMs for each group because the server uses interleaved memory. If DIMMs of different specifications* are installed in a group, the server does not operate normally.

* DIMM specification is shown on the label attached to the DIMM as follows:

Example: Frequency of 200 MHz, buffered, capacity of 128 MB, raw address of 12 bits, column address of 10 bits, and single side



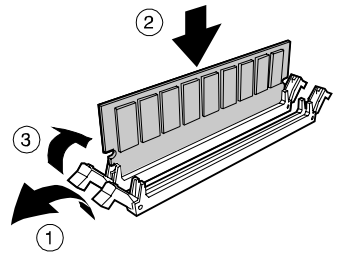
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the rear access cover.
4. Remove the CPU access cover.
5. Remove the memory board.
6. Locate the DIMM group which you are going to install DIMMs.
7. Open the levers at both ends of the socket (1).

IMPORTANT: To avoid damaging the lever, do not apply an excess force to the lever.

8. Push the DIMM straight into the socket (2).

IMPORTANT: Use extreme care when installing a DIMM. Applying too much pressure can damage the socket. Keyed DIMMs insert only one way.

9. Gently push the levers to the upright position until they engage the notches in the DIMM.(3)



10. Install the components you removed in steps 1 to 5.

11. Power on the server and verify that POST displays no error messages.

If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.

12. Start the SETUP and select [Advanced] → [Memory Configuration] to verify that the installed DIMM shows the status "Normal". (See Chapter 4 or details.)

13. Select "Yes" for [Reset Configuration Data] on the [Advanced] menu.

This setting is required to change the hardware configuration data. See Chapter 4 for details.

14. If Windows Server 2003 or Windows 2000 is in use, set the paging file size to the recommended value (total memory size * 1.5) or a greater value. See Chapter 5 for details.

Removal

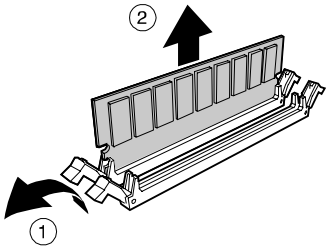
Remove the DIMM depending on the following procedure.

NOTES:

- To remove the failed DIMM, check the error message appearing in POST or NEC ESMPRO to identify the DIMM socket (group) in which the failed DIMM is installed.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the rear access cover.
4. Remove the CPU access cover.
5. Remove the memory board.
6. Open the levers at both sides of the socket from which you remove the DIMM.(1).

 The DIMM is unlocked and ready for removal.(2)



7. Reinstall all parts removed in Steps 1 to 5.
8. Power on the server and verify that POST displays no error messages.

 If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.
9. Start the SETUP and select [Advanced] → [Memory Configuration] → [Memory Retest] → [Enabled] to clear the error information of the removed DIMM. (See Chapter 4 for details.)
10. Select "Yes" for [Reset Configuration Data] on the Advanced menu.

 This setting is required to change the hardware configuration data. See Chapter 4 for details.

Memory Mirroring / Online Spare Memory Feature

The server provides the memory mirroring and online spare memory features.

To use either of these features, install standby memory boards in the server and select the desired feature from the BIOS setup operation.

NOTES:

- To enable memory mirroring /online spare memory feature, memory boards in DIMM group #1 and #3 must be the same capacities and type.
- Contact your service representative if you need to use these features.

Memory Mirroring Feature

The memory mirroring feature places a memory group as spare memory in standby state. If the current memory group encounters an uncorrectable error, the memory mirroring feature switches to the standby memory group. When this feature is used, the current memory group and the standby memory group should be located in DIMM group #1 and DIMM group #3, respectively. Memory boards (DIMM) cannot be installed in DIMM group #2.

- How to enable the memory mirroring feature
 - Installing additional memory boards

 Add memory boards (DIMM) according to the User's Guide.

 The memory boards for mirroring should be installed to memory slots belonging to "DIMM group #3. The installed memory boards must be the same capacities and type as the memory boards installed as "DIMM group #1." The table below shows combinations of DIMMs installed.

	DIMM group #1	DIMM group #2	DIMM group #3 (Memory boards for mirroring)
A	1GB (256MB*4)	Not installed	1GB (256MB*4)
B	2GB (512MB*4)	Not installed	2GB (512MB*4)
C	4GB (1GB*4)	Not installed	4GB (1GB*4)
D	8GB (2GB*4)	Not installed	8GB (2GB*4)

NOTES:

- 1GB (256MB*4) memory boards are installed in DIMM group #1 as standard when the server is delivered.
- Column "DIMM group #3" shows sockets for online spare memory.

Online Spare Memory

The online spare memory feature places a memory group as spare memory in standby state. If the current memory group often exceeded the predefined threshold for the maximum number of correctable ECC errors occurrence, the online spare memory feature automatically switches to the standby memory group by copying the contents of the current memory group into the standby memory group. This feature enables continuous operation without replacement of the memory board.

- How to enable the online spare memory feature

 – Installing additional memory boards
 Add memory boards (DIMM) according to this chapter.

 The installed memory boards must be the same capacities and type as the memory boards installed as "DIMM group #1" and "DIMM group #2". Memory slots are as shown for "DIMM group #3". The table below shows combinations of DIMMs installed.

	DIMM group #1	DIMM group #2	DIMM group #3
A	1GB (256MB*4)	Not installed	1GB (256MB*4)
B	1GB (256MB*4)	1GB (256MB*4)	1GB (256MB*4)
C	2GB (512MB*4)	Not installed	2GB (512MB*4)
D	2GB (512MB*4)	2GB (512MB*4)	2GB (512MB*4)
E	4GB (1GB*4)	Not installed	4GB (1GB*4)
F	4GB (1GB*4)	4GB (1GB*4)	4GB (1GB*4)
G	8GB (2GB*4)	Not installed	8GB (2GB*4)
H	8GB (2GB*4)	8GB (2GB*4)	8GB (2GB*4)

NOTES:

1. Column "DIMM group #3" shows sockets for online spare memory.
2. 1GB (256MB*4) Memory boards are installed in DIMM group #1 as standard when the server is delivered.

 – Setting BIOS

 The menu item below has been added to "Memory Configuration", which is explained in Chapter 4. To enable the memory mirroring / online spare memory feature, change the setting of the item to each. The item is factory-set to [Disabled].

Item	Parameter
Online Sparing/Mirroring memory	[Disabled] Sparing Mirroring

■ Others

– Memory capacity displayed on the OS = total capacity of physically installed memory – capacity for online spare memory

– Enabling the memory mirroring or online spare memory feature does not influence the operations of applications.

– The each feature is automatically disabled when the following error message is displayed:

8200 Online Spare Memory was not ready.

The memory board capacity for online spare memory (DIMM group #3) does not match the capacity of "DIMM group #1" or "DIMM group #2". Check the memory board capacity.

8201 Mirroring Memory was not ready.

The memory board capacity for memory mirroring (DIMM group #3) does not match the capacity of "DIMM group #1", or "DIMM group #2" contains memory board. Check the memory board capacity, or remove the memory board from "DIMM group #2".

– The following indicates that the memory mirroring /online spare memory feature has worked:

a) The Status lamp on the front panel of the server flashes green.

b) The error DIMM group is degraded when the server restarts after the memory mirroring or online spare memory feature has worked.

c) If NEC ESMPRO Agent has been installed, the following log is registered as a system log of Event Viewer:
Source name: ESMCommonService
Event ID: 2313
Explanation: Part of the DIMM was isolated due to a memory error.
Memory number: XX
Date/time: XX

d) If report setting is made through NEC ESMPRO Agent, Manager reporting and ALIVE reporting is performed. The report contents are as follows:
Explanation: Part of the DIMM was isolated due to a memory error.
Memory number: XX
Date/time: XX

Processor Board Air Duct

The processor board air duct is a cover for improving cooling effect of CPU. To install or remove the processor (CPU), remove the processor board air duct.

> **IMPORTANT:** To maintain the cooling effect in the server, the processor board air duct must be correctly installed into the chassis.

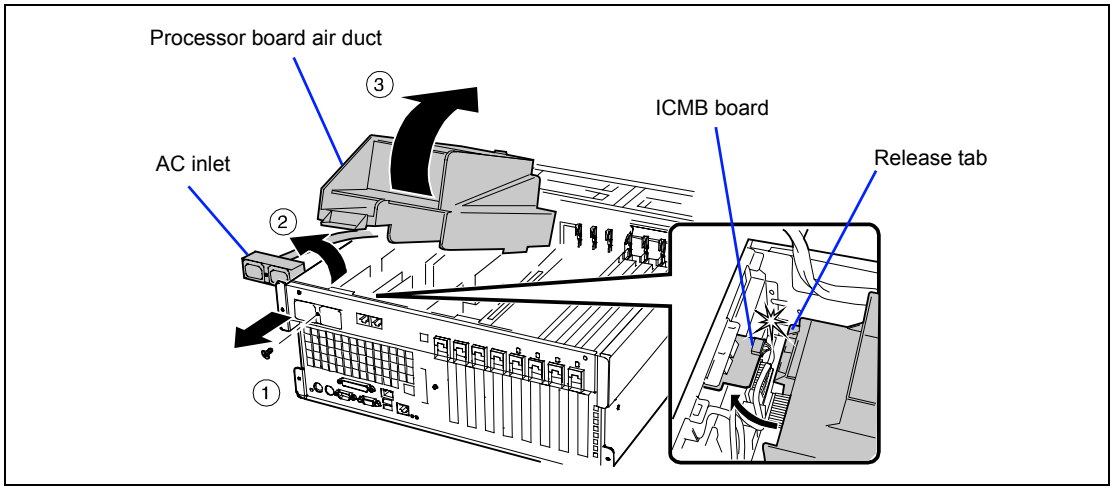
Removal

Remove the processor board air duct in the following procedure.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the rear access cover.
4. Remove the CPU access cover.
5. Remove the memory board.
6. Remove the screw holding the dual AC inlet (located at the top right rear of the chassis) and pull it clear of the chassis as far as the attached cords will allow. (1), (2)
7. Holding the power receptacle and cords clear, squeeze together the two tabs on the air duct at the end closest to the rear of the chassis.
8. Raise the end, rotating the duct until it is clear of the cords. (3)

> **IMPORTANT:** Do not hit on the ICMB board mounted at the rear of the chassis while rotating the duct.

9. Disengage the tab at the front of the electronics bay and remove the duct from the chassis.



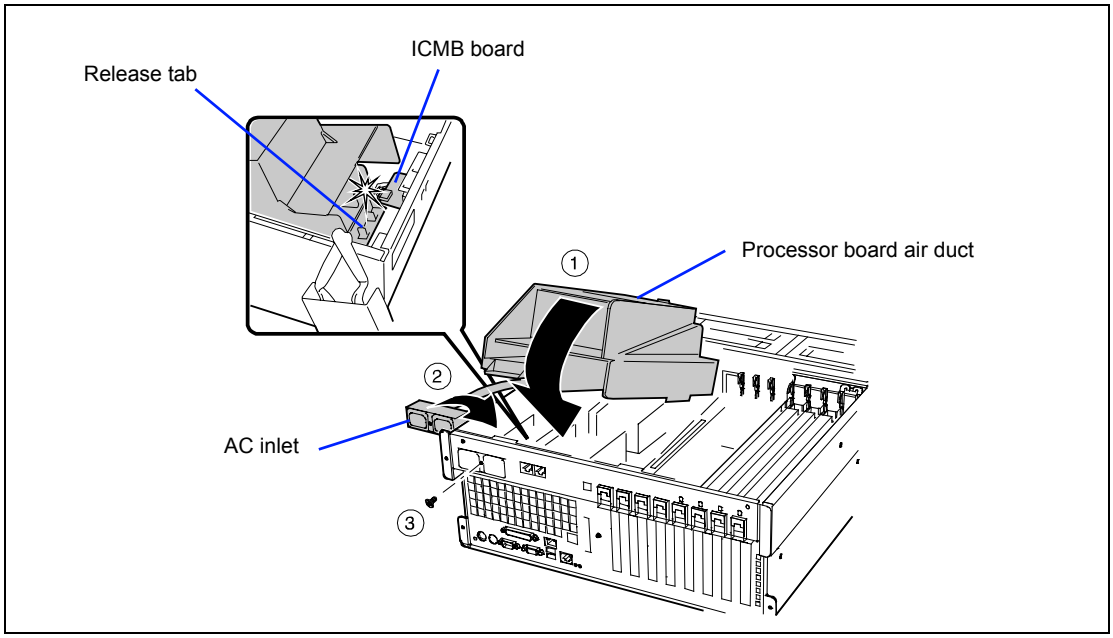
Installation

Install a processor board air duct in the following procedure.

1. Orient the duct so that the two release tabs are toward the rear of the chassis.
2. With the rear of the air duct raised, insert the tab on the front of the air duct into the slot in the chassis. The duct must be at an angle of at least 30° for the tab to engage correctly.
3. Holding the AC inlet and attached cords clear, rotate the rear end of the duct down.

 Adjust the position of the duct until it falls into place. Do not force it down.

> **IMPORTANT:** Do not hit on the ICMB board mounted at the rear of the chassis while rotating the duct.



4. Move the AC inlet into place and attach it using the screw. (2), (3)
5. Reinstall all parts removed in removal procedures.

Processor Board

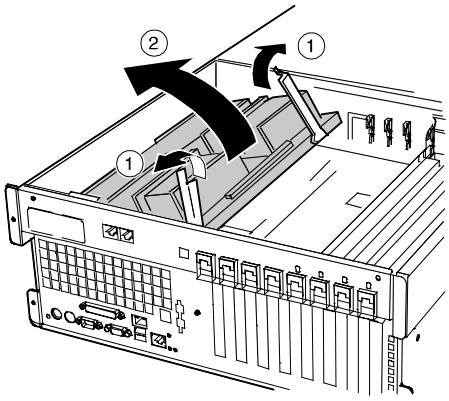
To install or remove the processor (CPU), remove the processor board.

Removal

Remove the processor board in the following procedure.

> **IMPORTANT:** The processor board is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the processor board. Do not touch the processor board terminals or on-board parts by a bare hand or place the processor board directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the rear access cover.
4. Remove the CPU access cover.
5. Remove the memory board.
6. Remove the processor board air duct.
7. Rotate the handles on the processor board until they are fully open. (1)
8. Using the handles, tilt the processor board up and remove it from the chassis. (2)



9. Place the processor board on a clean, dry, and static-free place.

Installation

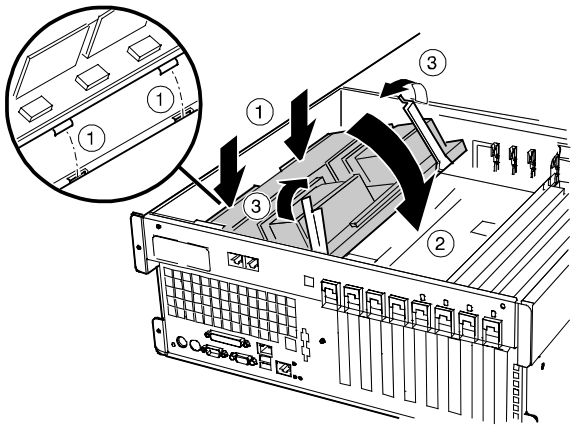
Install a processor board in the following procedure.

1. Insert the tabs on the processor board into the slots on the baseboard. (1)

 IMPORTANT: Do not contact the tabs with the components mounted on the baseboard.

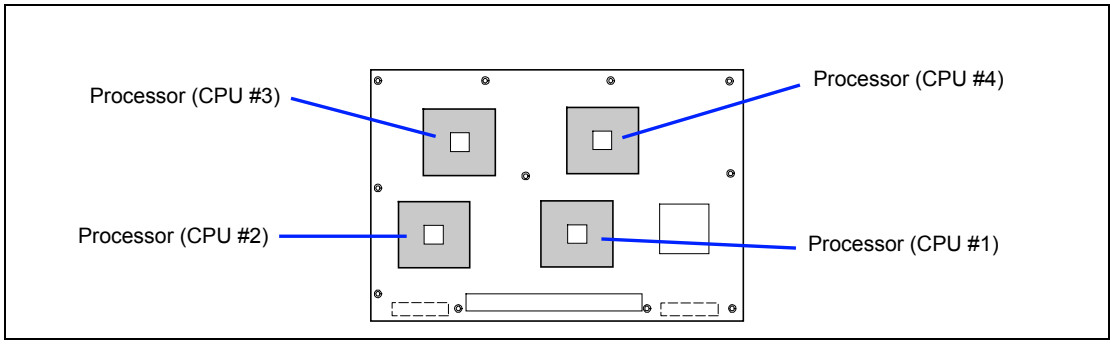
 NOTE: Make sure that all the tabs are completely inserted into the the slots.

2. With the handles in the open position, lower the processor board until it rests on the baseboard.(2)
3. Close and press down on the handles until the processor board is fully engaged with the sockets on the baseboard.(3)
4. Reinstall the removed components.



Processor (CPU)

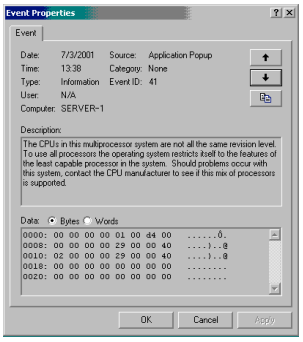
The processor board includes four Intel Xeon MP sockets (one processor is mounted at the factory).



IMPORTANT:

- The CPU is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the CPU. Do not touch the CPU pins by a bare hand or place the CPU directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- When using the server with the single processor configuration, CPU must be mounted on the Processor #1.
- Install the CPU in the numerical order (see figure above).
- To maintain the cooling effect in the server, install the dummy sponge onto the processor #3 and #4 sockets when the CPU is not installed to these sockets.

NOTE: If the different revision of the processor is installed in the multiprocessor system, Windows 2000 logs the following information every startup. If this message is logged, it is no problem for operation.



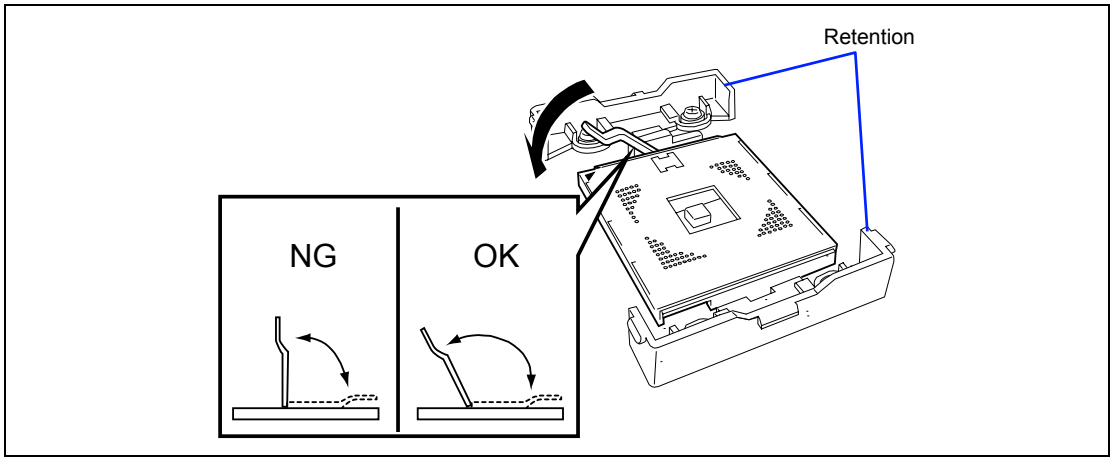
Installation

Take the following steps to install the CPU.

> **NOTE:** To clarify the explanation, the duct of the retention may be omitted in the following figures.

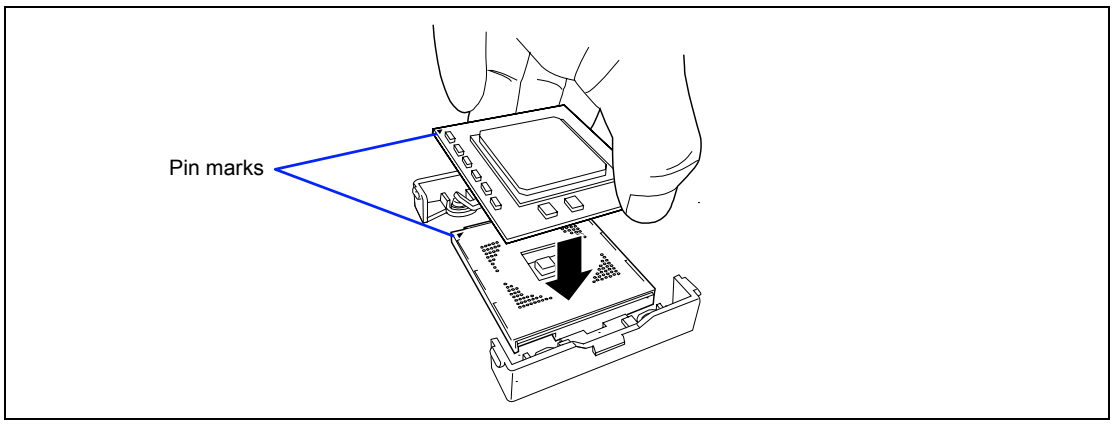
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the rear access cover.
4. Remove the CPU access cover.
5. Remove the memory board.
6. Remove the processor board air duct.
7. Remove the processor board.
8. Locate the CPU socket which you are going to install CPU and remove the socket cover from the socket.
9. Raise the locking lever on the socket.

> **IMPORTANT:** Open the lever until it stops. It can be opened to approx. 120 degrees.

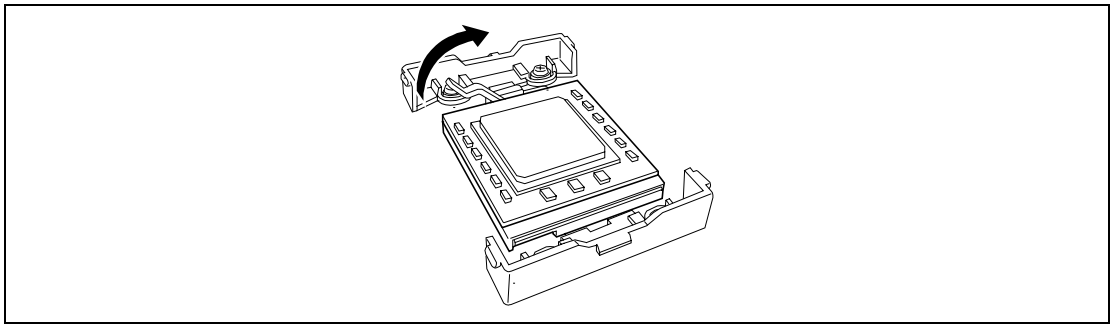


10. Aligning the pins of the CPU with the socket, insert the CPU slowly and gently into the socket.

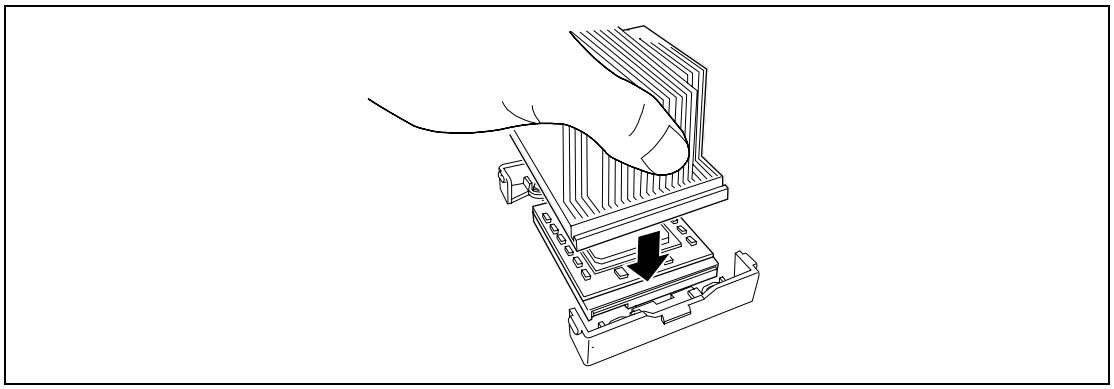
> **IMPORTANT:** Be aware of CPU direction. Pin layouts on two corners among four differ from others to prevent an incorrect insertion. Confirm the pin mark and pin layout on the socket, and insert the CPU correctly.



11. Push the CPU lightly to the socket, and push down the lever to secure the CPU.



12. Put the heat sink on CPU.

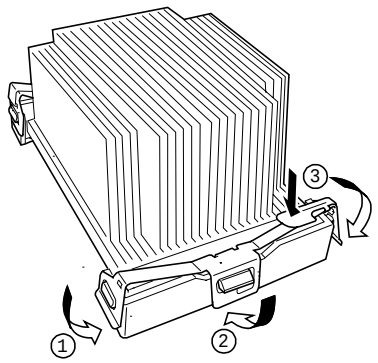


13. Install the both heat sink clips as follows:

(1) Hook one end of the clip over the tab on the retention.

(2) Align the clip with the slot in the heat sink and press down on the center of the clip until it snaps over the center tab.

(3) Snap the remaining end of the clip down over its tab.



14. Make sure that the heat sink is level.

NOTES:

- If the heat sink is not level, remove it, and then install it again. The following probably causes the heat sink not to be level:
 - The CPU is not positioned correctly.
 - The heat sink clip is not engaged correctly.
- Do not move the secured heat sink.

15. Install the components you removed previously.

16. Verify that POST displays no error messages.

If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.

17. Select "Yes" for [Reset Configuration Data] on the Advanced menu.

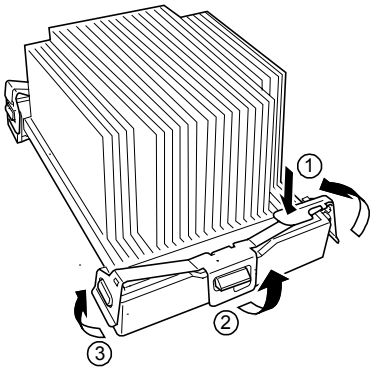
This setting is required to change the hardware configuration data. See Chapter 4 for details.

18. To add one or more CPUs to the server in 1-CPU configuration to operate the server with more than one CPU, do the procedure below:

For Windows 2000, change the driver of [Computer] in the device manager to [ACPI multi-processor PC] and then update the system (see Chapter 5).

Removal

To remove the CPU, prepare the removal referring to steps 1 and 7 in the installation procedure and do the reverse procedure of steps 9 to 13. For removing the heat sink clip, press the release lever on the clip down and release the clip from the tab on the processor socket.



IMPORTANT:

- Do not remove any CPU unless it is failed.
- To maintain the cooling effect in the server, install the dummy sponge onto the processor #3 and #4 sockets when the CPU is not installed to these sockets.
- After the operation, heat may make the cool seat at the bottom of the heat sink adhere to the CPU. To remove the heat sink from the CPU, first turn the heat sink to the left and right lightly to make sure that the heat sink can be apart from the CPU. Removing the heat sink with it adhering to the CPU may cause the CPU and/or socket to be defected.

Do the following procedure if a CPU is removed (or replaced).

1. Start SETUP to select menus "Main" – "Processor Settings" – "Processor Retest" in the order to clear the error information on the removed CPU (see Chapter 4).

 When a CPU is replaced, select menus "Main" – "Processor Settings" to confirm that the ID and L2 and L3 Cache of the additional CPU are defined normally (see Chapter 4).

2. Select "Yes" for [Reset Configuration Data] on the Advanced menu.

 This is required to update the hardware configuration information. See Chapter 4 for details.

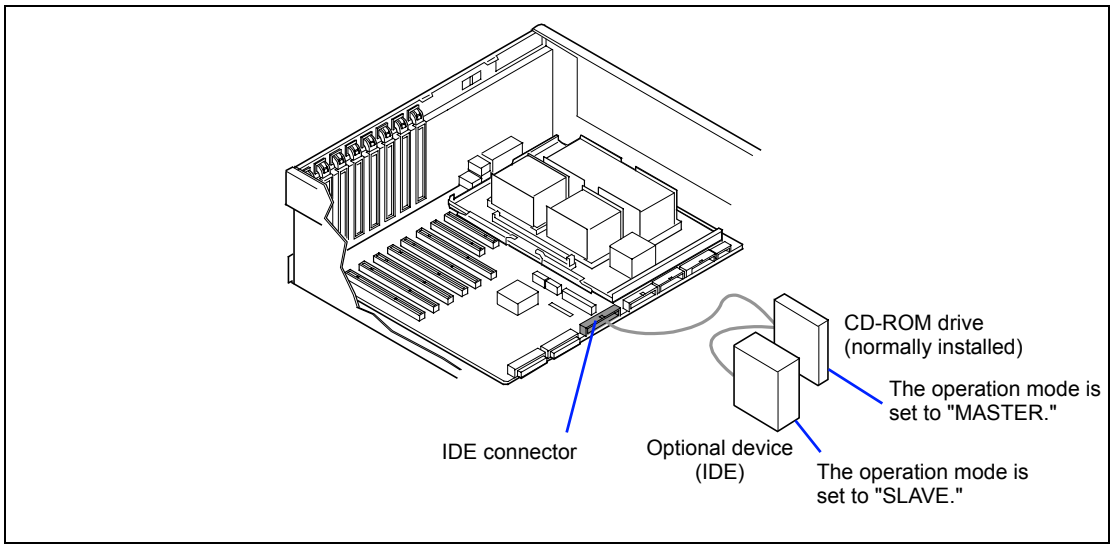
CABLE CONNECTION

This section describes the cable connection pattern within the server.

IDE Interface

A single IDE connector is installed on the baseboard. Two connectors are connected with cables in the normal status. One of the connectors is connected to the CD-ROM drive normally installed. The other connector can be connected to the IDE device, a built-in option installed on the 5.25-inch device bay.

For the device installed on the 5.25-inch device bay, set the operation mode (MASTER/SLAVE) to SLAVE (for the setting, see the manual coming with the device). Connect the proper cables to the baseboard, CD-ROM drive, and option devices in the order.



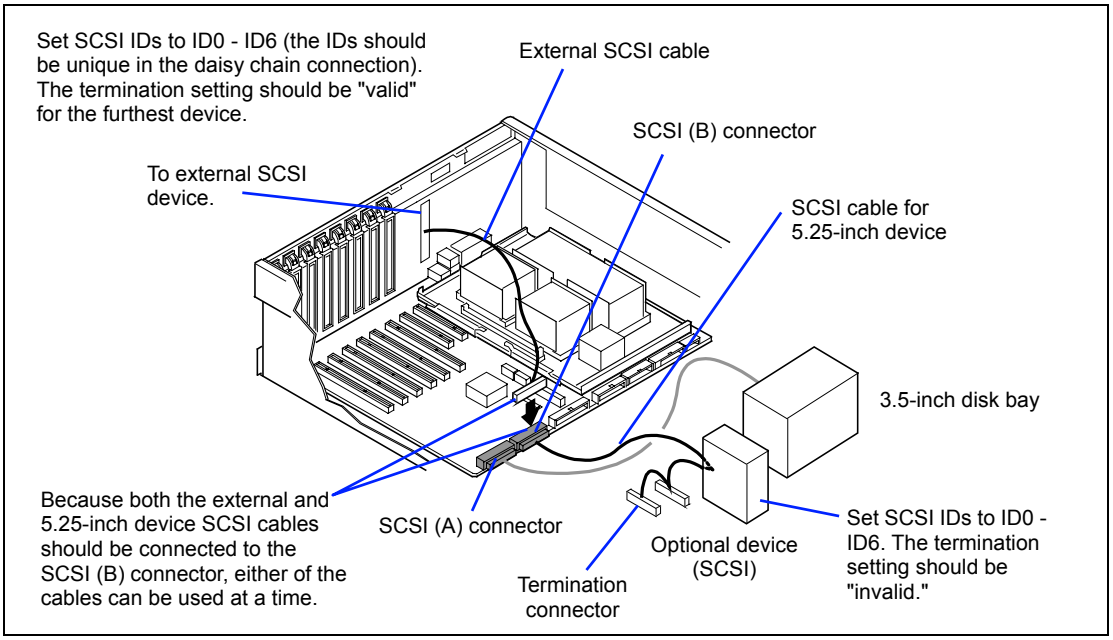
SCSI Interface

This section describes the connection pattern of the SCSI interface.

Baseboard

Two Ultra 320 SCSI connectors are installed on the baseboard. The Ultra 320 SCSI (A) connector is connected to the 3.5-inch hard disk bay in the normal status.

The SCSI (B) connector is provided to connect with the built-in option installed in the 5.25-inch device bay or an external SCSI device. When the server is delivered, the SCSI (B) connector is connected with the cable for using the 5.25-inch device bay. To use an external SCSI device, it is necessary to connect the SCSI cable coming with the server instead.



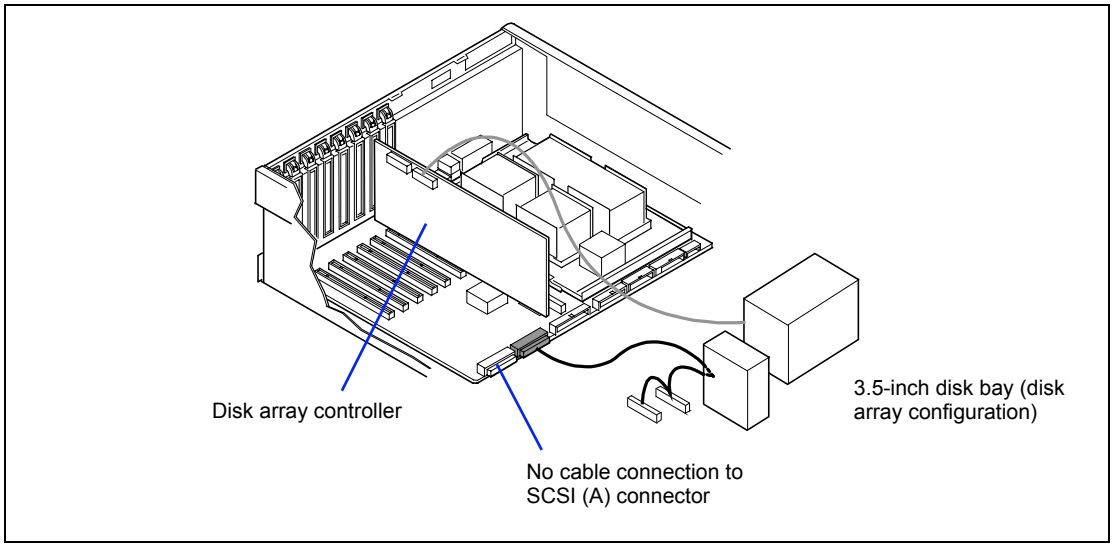
The wide-narrow conversion connector (50 pins) is connected to the cable connector for a 5.25-inch device. To install a device with 68-pin connector on the 5.25-inch device bay, remove the wide-narrow conversion connector and then connect the 68-pin connector.

To connect external SCSI devices, install the termination connector on the device at the furthest position or specify the termination with the internal setting of the device.

Disk Array Controller

The disk array controller board N8103-81F is an optional PCI board provided to improve the data reliability.

The installation of this board enables the hard disks in the 3.5-inch hard disk bay of the server or those in an optional disk expansion unit to be used in the disk array configuration.



Disk array configuration of built-in disks

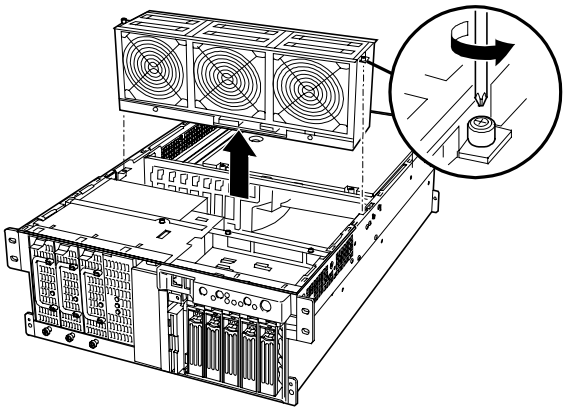
On the server with the installation of the disk array controller board, how to connect the cables for modifying the hard disk configuration to the disk array configuration is described below.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the front access cover.
4. Remove the rear access cover.

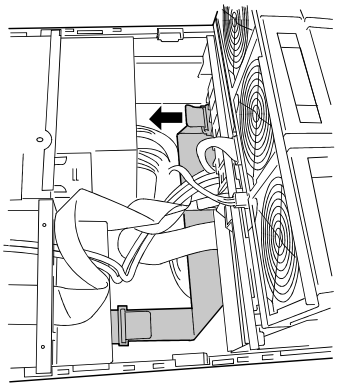
 If you are going to install the disk array controller on the PCI slot #3 or #4, remove the CPU access cover.
5. Install the disk array controller.

 See "PCI board" in "Installation of options" to check the board installation position and install the board.
6. Loosen the two screws with which the fan unit is fixed.

7. Lift the fan unit straight to pull out it from the main unit.

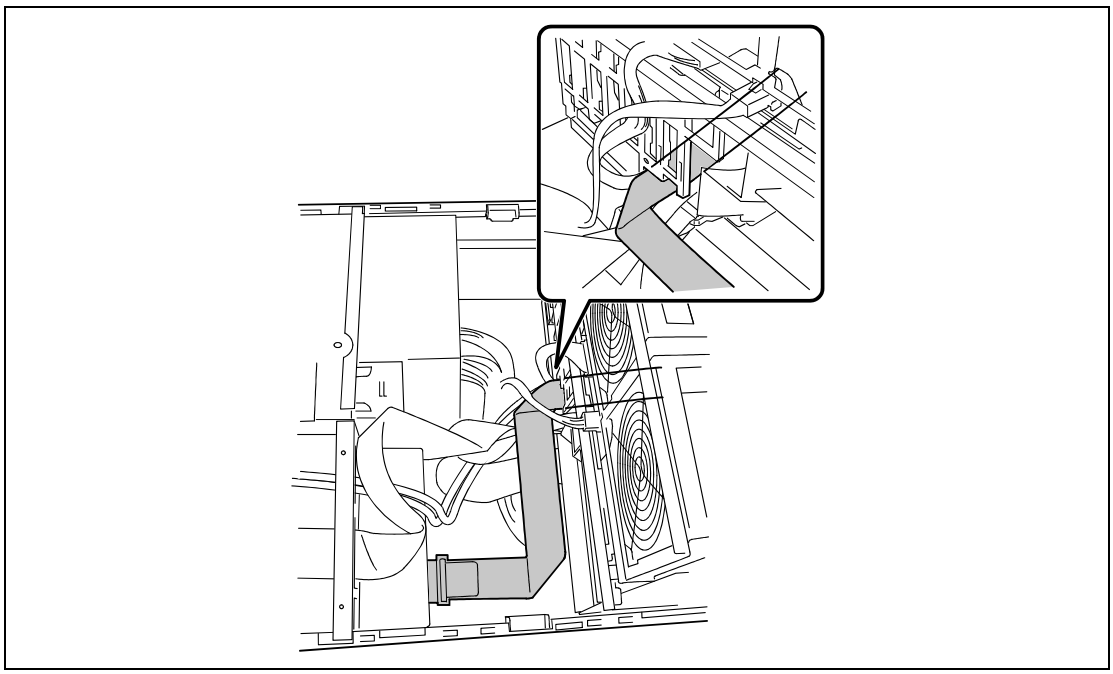


8. Remove the SCSI cable connected to the Ultra 320 SCSI (A) connector on the baseboard.



9. Connect the SCSI cable removed in step 8 to the disk array controller.

Route the SCSI cable through the point shown in the figure below when it is routed below the guide rail for the PCI board.



10. Install the removed parts.

11. Turn on the power of the server to confirm that no error message does not appear in POST.

If an error message appears, write down the message and see the error message listed in Chapter 8.

12. Start the BIOS setup utility to set "Reset Configuration Data" on the "Advanced" menu to "Yes."

It is required to update the hardware configuration information. See Chapter 4 for details.

13. Configure the system by using proper utilities.

See the online document stored in CD-ROM "EXPRESSBUILDER" coming with the server or the manual coming with the disk array controller.

Disk array configuration of disk expansion units

The N8141-32F disk expansion unit can contain up to 14 hard disk drives. The cabinet is exclusively used for the server. The server with the installation of the disk array controller board can connect with up to 16 disk expansion unit (see the manual of the disk expansion unit for details).

> **IMPORTANT:** The disk expansion unit does not contain hard disk drives. Purchase them additionally.

To connect the server with the N8141-32F disk expansion unit, any of the optional cables listed below is required:

- K410-93(01) expansion unit connection SCSI cable
- K410-93(03) expansion unit connection SCSI cable
- K410-93(06) expansion unit connection SCSI cable

After connecting the server with the disk expansion unit, set the disk expansion unit to the disk array configuration using the Disk Array Configuration Utility. See Chapter 6 for details of the setting and the procedure.

For the disk expansion unit with the disk array configuration, the auto rebuild feature provided by the disk array controller board allows the data defected due to failure of any hard disk installed in the disk expansion units to be recovered (replace the defected disk with a new one in the power-on status [hot-swap feature]).

External SCSI Cable

To connect the external SCSI device with the server, remove the cable for 5.25-inch device from Ultra 320 SCSI (B) connector and connect the external SCSI cable coming with the server.

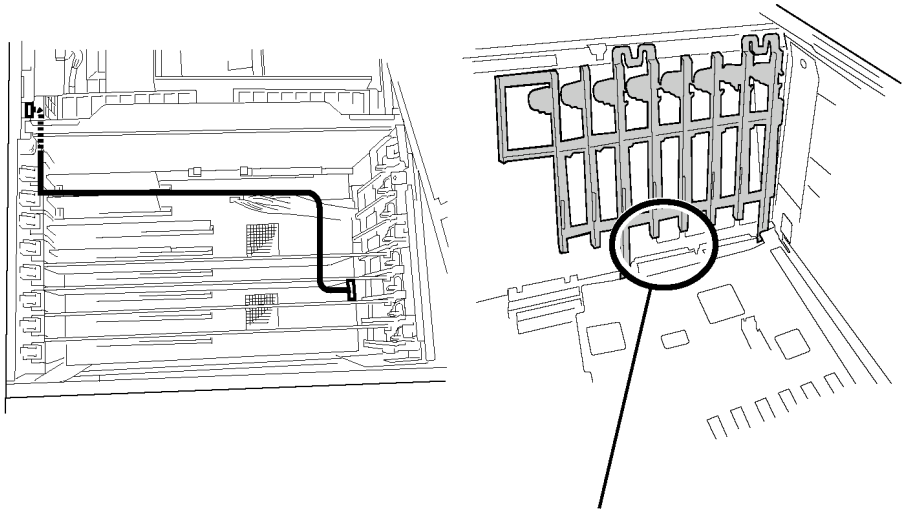
The connection procedure is described below:

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the front access cover.
4. Remove the rear access cover.
5. Remove the CPU access cover.
6. Loosen the two screws with which the fan unit is fixed.
7. Lift the fan unit straight to pull out it from the server.
8. Remove the memory board.
9. Remove the cable from the Ultra 320 SCSI (B) connector on the baseboard.

 IMPORTANT: Save the removed cable carefully.

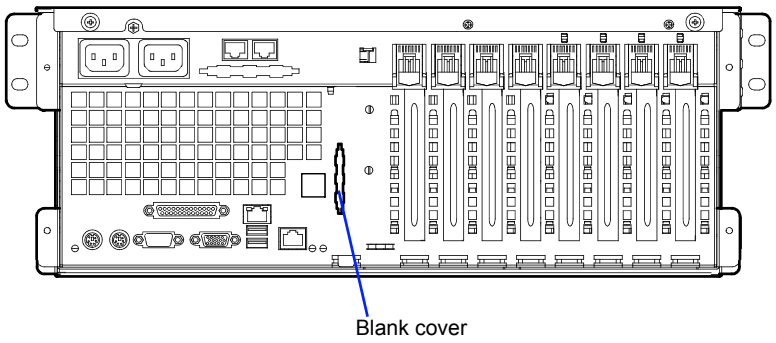
10. Connect the external SCSI cable coming with the server to Ultra 320 SCSI (B) connector on the baseboard.
11. Route the cable to the rear of the server.

 See the figure below for the cable routing.



Route the cable below the guide rail for the PCI board from the position shown in the figure.

12. Remove the blank cover from the rear frame by using a flat-tip screwdriver.



13. Remove two screws from the external SCSI cable connector.

14. Align the cable end with the hole on the rear of the server.

15. Fix the cable connector from the outside of the rear face with two screws removed in Step 13.

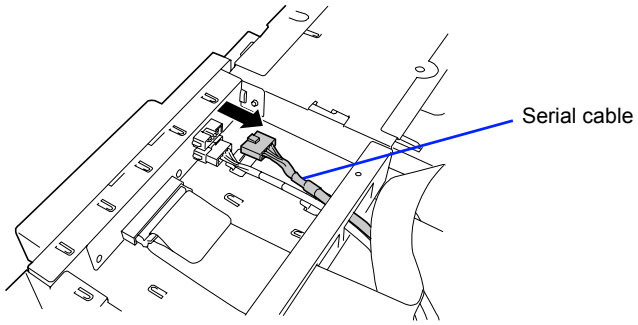
16. Install the removed parts.

Serial Interface

It is possible to move serial port B located at the front of the unit to the rear. Use the serial cable for the rear face coming with the server for the connection.

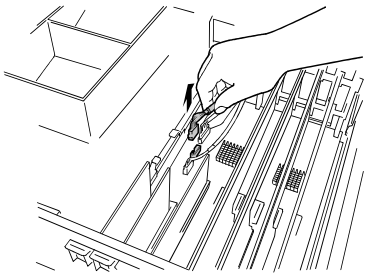
The connection procedure is described below:

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the front access cover.
4. Remove the rear access cover.
5. Remove the CPU access cover.
6. Remove the memory board.
7. Loosen the two screws with which the fan unit is fixed.
8. Lift the fan unit straight to pull out it from the server.
9. Remove the serial cable from the connector on the front of the server.

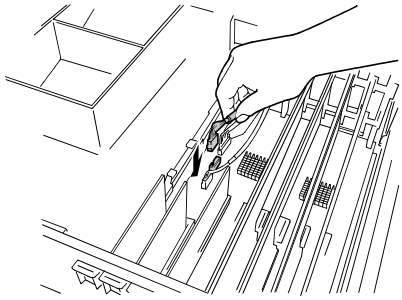


10. Remove the serial cable from the connector on the baseboard.

IMPORTANT: Save the removed cable carefully.

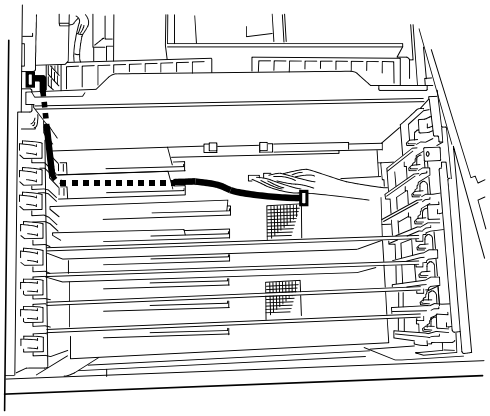


11. Connect the rear serial cable coming with the server to the connector on the baseboard.

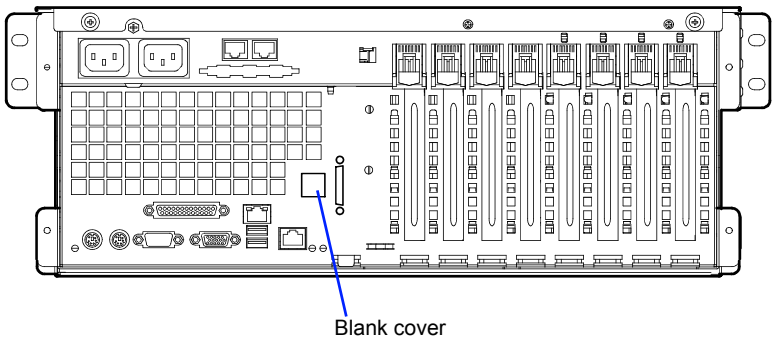


12. Route the cable to the rear of the server.

See the figure below for the cable routing.



13. Remove the blank cover from the rear frame by using a flat-tip screwdriver.



14. Remove the screw located on the bracket of the rear serial cable connector.

15. Hook the bracket of the rear serial cable connector from the inside of the rear face.

16. Fix the serial cable connector from the outside of the rear face with a single screw removed in step 14.

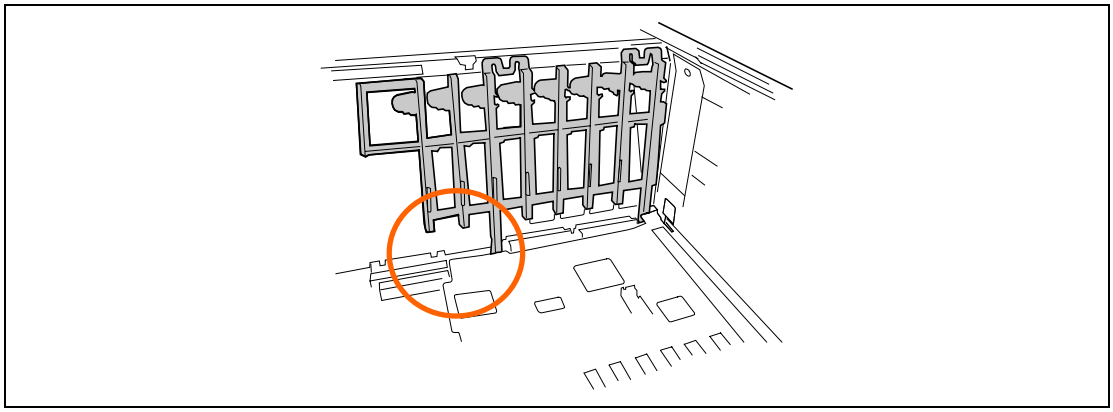
17. Change the settings of the jumpers on the baseboard, if it is necessary.

See the jumper positions shown in the figure below.

> **IMPORTANT:** Do not change the other jumper settings. Failure to follow it may cause the unit to be defected or some malfunction to occur.

18. Install the removed parts.

When the cable is reinstalled on the front of the server, route the cable below the guide rail for the PCI board from the position shown in the figure below.



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Appendix A

Specifications

Item		NEC Express5800/140Rc-4	
		N8100-1023F	N8100-1024F
Model type at shipment		Disk-less	
CPU	Type	Intel® Xeon$_{TM}$ processor MP	
	Clock/2nd cache	2.2GHz/2MB	3GHz/4MB
	Number of processors	1	
	Maximum	4	
Chipset		Grand Champion HE + CSB5	
Memory	Standard	1GB (256 MB× 4)	
	Maximum	24GB (The standard DIMM must be replaced.)	
	Expansion unit	4 DIMMs (128/256/512/1024/2048MB)	
	Expansion times	2 times	
	Memory module	DDR200 SDRAM DIMM (Registered)	
	Error check	ECC	
	Memory mirroring feature/Online sparing memory feature	Available	
Graphics (VRAM)		ATI RAGE XL (VRAM 4MB)	
Auxiliary input device	Floppy disk (standard)	3.5-inch drive × 1 (standard)	
	Hard disk (standard)	None (Hot-swap)	
	Hard disk (maximum)	730 GB (146 GB × 5)	
	CD-ROM (standard)	ATAPI Interface × 1 (Load on tray type, x24 speed)	
5.25-inch device bay		1 slots	
3.5-inch disk bay		5 slots (Hot-swap)	
Additional slot	PCI-X 100MHz (64-bit)	6 slots	
	PCI 33MHz (32-bit)	2 slots	
LAN interface		1000BASE-T/100BASE-TX/10BASE-T (1 port), 100BASE-TX/10BASE-T (1 port)	
External interface	Keyboard	MINI DIN 6-pin connector (1 port)	
	Mouse	MINI DIN 6-pin connector (1 port)	
	USB	4-pin (3 ports)	
	Serial	RJ-45 (1 port) D-sub 9-pin (1 port)	
	Parallel	D-sub 25-pin (1 port)	
	Network	RJ-45 (2 ports)	
	Display	MINI D-sub 15-pin (1 port)	
	SCSI	Ultra320 SCSI (1 port) (Connecting the external SCSI cable coming with the server is necessary for external use.)	
Cabinet design		19-inch rack mounting type (4U)	
External dimensions		483 (width) × 178 (height) × 711 (depth) mm	
Weight		33 kg (Max.)	
Power supply		100 to 120 VAC ±10%, 200 to 240 VAC ±10%, 50/60 Hz ±1 Hz	
Power consumption		825 VA, 800 W	
Environmental requirements	Temperature	10 to 35°C	
	Humidity	20 to 80% RH (no condensation)	
Others		NEC EXPRESSBUILDER supported, NEC ESMPRO provided in the standard configuration	

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Appendix B

Other Precautions

Transfer Rate of the On-board LAN Controller

The baseboard includes the two network interface controllers.

- LAN 1 supports 10Base-T and 100Base-TX networks and a capable of full or half duplex.
- LAN 2 supports 10Base-T, 100Base-TX, and 1000Base-T networks and a capable of full or half duplex.

The both controllers can automatically detect and switch for network speed and transfer mode connected to the HUB. However, for proper network operation, specify the "Link Speed & Duplex" value the same as the value specified for HUB.

Server Management Software

The NEC EXPRESSBUILDER CD-ROM that comes with the server contains the NEC ESMPRO utility.

NEC recommends that you should install the NEC ESMPRO for effective use of the reliability enhancement features of the server.

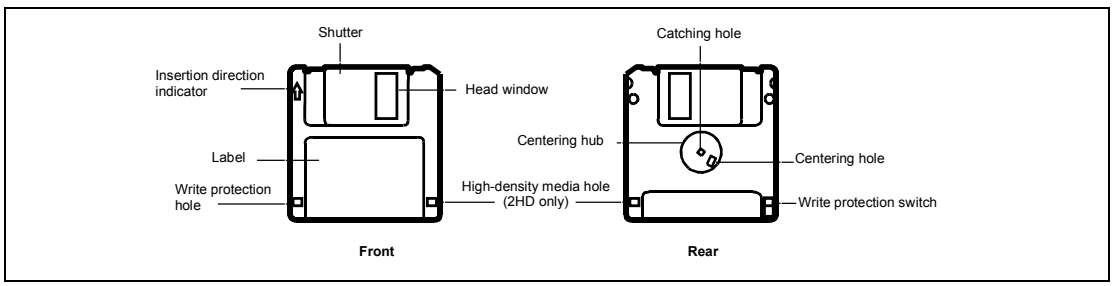
Floppy Disk

The following describes use of the floppy disk.

Floppy disk type

The server uses 3.5-inch floppy disks. You can use the following two types of 3.5-inch floppy disks:

- 2HD floppy disk (double-sided high-density track type)
 Stores data of 1.44MB.
- 2DD floppy disk (double-sided double-density track type)
 Stores data of 720KB.



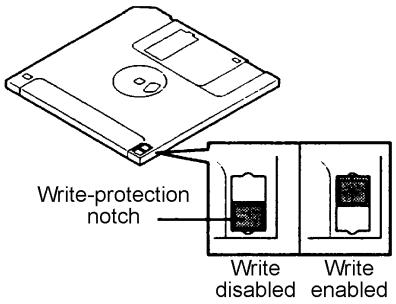
Notes on use

The floppy disk is an important data storage media with delicate structure and requires care. Keep the following notes in mind to use it:

- Insert the floppy disk into the floppy disk drive gently as far as it goes.
- Attach the label to the correct position.
- Do not write anything directly onto the disk surface with a pencil or ball-point pen.
- Do not open the shutter.
- Do not use the floppy disk in a dusty place.
- Do not place anything on the floppy disk.
- Do not leave the floppy disk in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- Do not leave the floppy disk with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the floppy disk near any form of liquid or a chemical or in a place where a chemical may be accidentally sprayed over them.
- Do not place any magnetic objects (e.g., magnet) near the floppy disk.
- Do not clip the floppy disk or drop it.
- Keep the floppy disk in a floppy disk case that protects it from magnetism and dust.

- Write-protection

 A floppy disk has a write-protect switch that prevents the stored data from accidental erasure.



 You can read data from a write-protected floppy disk, but you cannot save data into the floppy disk or format it. NEC recommends that you should write-protect any floppy disk containing valuable data unless you are about to save data.

 To write-protect a 3.5-inch floppy disk, use the write-protect switch provided on its back.

- Disk format

 To write data into a floppy disk, the floppy disk must be "formatted." "Formatting" is to initialize the floppy disk and make it available for the system environment (operating system).

> **IMPORTANT:**
>
> - Formatting a used floppy disk clears all the data contained in it, if any.
> - Formatting a floppy disk from the DOS command line is not available with the server. Use a formatted floppy disk to work with it on the DOS command line.

 The format method depends on your operating system. Refer to the manual that comes with your operating system for details.

- Data backup

 "Data backup" is to copy data stored in a media into another media (e.g., floppy disk, digital audio tape, or magnet-optical disk).

> **IMPORTANT:** Make sure to make a back-up copy of every floppy disk, if provided.

 The floppy disk is a very delicate storage media. Dust or thermal changes, as well as operator's misconduct or sever failures, may cause loss of data. To avoid loss of data, NEC recommends that you should make a back-up copy of your valuable data on a regular basis.

CD-ROM

Keep the following notes in mind to use the CD-ROM for the server:

- Press the center of the storage case to remove the CD-ROM from the case.
- Do not drop the CD-ROM.
- Do not place anything on the CD-ROM or bend the CD-ROM.
- Do not attach any label onto the CD-ROM.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the CD-ROM with its printed side upward and gently put it on the tray.
- Do not scratch the CD-ROM or write anything directly on it with a pencil or ball-point pen.
- Do not leave the CD-ROM with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the CD-ROM in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the CD-ROM, wipe the CD-ROM from its center to edge with a dry soft cloth slowly and gently.
- Use the CD cleaner to clean the CD-ROM. Do not use record spray/cleaner, benzene, or thinner.
- Keep the CD-ROM in a CD-ROM case when not in use.

Tape Media

The following describes data handling with the DAT, DLT, or AIT optionally available for the server.

- Saving your valuable data

 When you save your valuable data or programs into the cartridge tape, you should save them into two cartridge tapes to make the primary and secondary tapes.

 This enables you to restore your data from one tape when the other makes a read error, as well as to protect your valuable data and programs from loss.

- Three-generation data management

 NEC recommends that you should employ three-generation data management for data storage.

 Three-generation data management uses three cartridge tapes: A, B, and C. You save data to tape A on the first day, tape B on the second day, tape C on the third day, tape A on the forth day, and so on. That is, you save data into cartridge tapes cyclically from tape A through C.

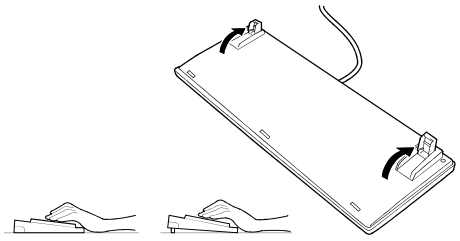
This enables you, for example, to use tape B to restore the data when tape C makes a read error. Also when both tapes B and C make a read error, you can restore your valuable data by using the data stored in tape A.

Keyboard

The keyboard is a device to instruct you computer by entering alphanumeric characters or symbols.

IMPORTANT:

- Do not pour any liquid such as water or put anything into the keyboard. Doing so may cause a failure of the keyboard.
- The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



NOTE: The keyboard functions depend on the software. Refer to the manual that comes with the software for details.

Mouse

Like the keyboard, the mouse is a device to instruct your computer. Many OS's and application software require the mouse for operation.

NOTE:

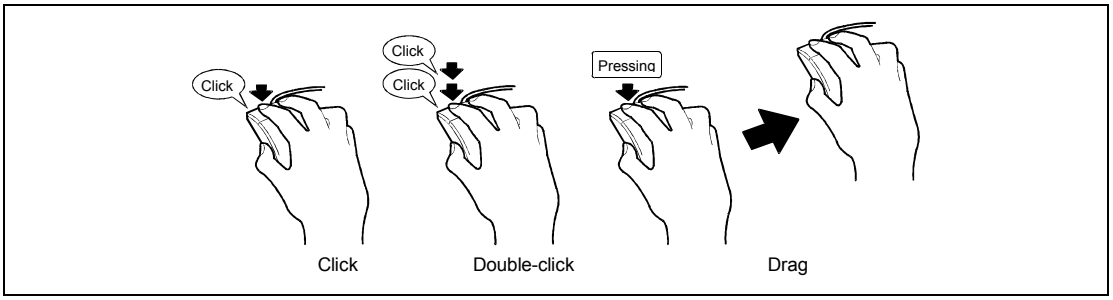
- Functions assigned to the mouse buttons vary depending on the software. For details, refer to the manual provided with the software.
- Use the mouse on a clean desk. Using the mouse on a dusty or dirty desk disturbs smooth movement or normal operation of the mouse. When your mouse movement seems dull, clean your mouse. (See Chapter 7.)



Mouse operation includes "Click," "Double-click," and "Drag."

Click:	Press the button only once and release it.
Double-click:	Press the button twice consecutively and release it.
Drag:	Press and hold the button and move the mouse.

Operation of the server involves combinations of these mouse operations and data entries with the keyboard.



Appendix C

IRQ and I/O Port Address

The factory-set interrupt requests and I/O port addresses are listed below. Find an appropriate one to install an optional device.

Interrupt Request

The factory-set IRQs are assigned as follows:

IRQ	Peripheral Device (Controller)	IRQ	Peripheral Device (Controller)
0	System timer	8	Real-time clock
1	Keyboard	9	PCI/SCI
2	Cascaded connection	10	PCI (BMC IRQ)
3	COM B serial port (PCI)	11	BMCIRQ/PCI/ISA
4	COM A serial port (PCI)	12	Mouse
5	PCI/LPT2 parallel port (BMC IRQ)	13	Numeric processor
6	Floppy disk	14	Primary IDE (CD-ROM drive)
7	LPT1 parallel port	15	PCI

PIRQ and PCI Device

The factory-set PCI device interrupts are assigned as follows. Use the BIOS setup utility, BIOS, for interrupt setup. See Chapter 4 for details.

Menu Option	Interrupt
PCI IRQ 1	On-board SCSI (Channel A)
PCI IRQ 2	On-board SCSI (Channel B)
PCI IRQ 3	On-board LAN #1
PCI IRQ 4	On-board LAN #2
PCI IRQ 5	On-board GA
PCI IRQ 6	--
PCI IRQ 7	PCI slot #1 (INT A)
PCI IRQ 8	PCI slot #2 (INT A)
PCI IRQ 9	PCI slot #3 (INT A)
PCI IRQ 10	PCI slot #4 (INT A)
PCI IRQ 11	PCI slot #5 (INT A)
PCI IRQ 12	PCI slot #6 (INT A)
PCI IRQ 13	PCI slot #7 (INT A)
PCI IRQ 14	PCI slot #8 (INT A)
PCI IRQ 15	--
PCI IRQ 16	SCI
PCI IRQ 17	PCI slot #1 (INT B)
PCI IRQ 18	PCI slot #2 (INT B)
PCI IRQ 19	PCI slot #3 (INT B)
PCI IRQ 20	PCI slot #4 (INT B)
PCI IRQ 21	PCI slot #5 (INT B)
PCI IRQ 22	PCI slot #6 (INT B)
PCI IRQ 23	PCI slot #7 (INT B)
PCI IRQ 24	PCI slot #8 (INT B)
PCI IRQ 25	PCI slot #1 (INT C), PCI slot #2 (INT D)
PCI IRQ 26	PCI slot #1 (INT D), PCI slot #2 (INT C)
PCI IRQ 27	PCI slot #3 (INT C), PCI slot #4 (INT D)
PCI IRQ 28	PCI slot #3 (INT D), PCI slot #4 (INT C)
PCI IRQ 29	PCI slot #5 (INT C), PCI slot #6 (INT D)
PCI IRQ 30	PCI slot #5 (INT D), PCI slot #6 (INT C)
PCI IRQ 31	PCI slot #7 (INT C), PCI slot #8 (INT D)
PCI IRQ 32	PCI slot #7 (INT D), PCI slot #8 (INT C)

I/O Port Address

The factory-set I/O port addresses for the server are assigned as follows:

Address	Chip in Use
00 - 1F	8-bit DMA control register
20 - 21	Master 8259 programming interface
2E - 2F	Configuration
40 - 43	8254 programming interface
60	Keyboard & mouse
61	NMI status register
64	Keyboard & mouse
70 - 71	NMI enable register/real-time clock
80 - 8F	16-bit DMA control register
A0 - A1	Slave 8259 programming interface
C0 - DF	DMA controller page register
E0 - E9	Base address register
F0	Register IRQ13
F1 - FF	Logical device configuration
170 - 177 or BAR2	EDMA2-compatible mode primary command block register
1F0 - 1F7 or BAR0	EDMA2-compatible mode secondary command block register
278 - 27F	(Parallel port 3)
2F8 - 2FF	Serial port B
BAR or 376	EDMA2-compatible mode secondary command block register
370 - 377	(Floppy disk drive 2), IDE 2
378 -37F	(Parallel port 2)
3B0 - 3BB	VGA
3BC - 3BE	Parallel port 1
3C0 - 3DF	VGA
3F6 or BAR1	EDMA2-compatible mode primary command block register
3F0 - 3F7	Floppy disk drive 1, IDE 1
3F8 - 3FF	Serial port A
40B	DMA1 expansion write mode register
4D0	Master 8259 ELCR programming
4D1	Slave 8259 ELCR programming
4D6	DMA2 expansion write mode register
580 - 58F	SMBus control
900-93F	PHPC1 register
940-97F	PHPC2 register
C00	PCI IRQ mapping index register
C01	PCI IRQ mapping data register
C14	PCI error status register
C49	Address & status control
C4A	Rise time counter control
C52	General register (GPMs)
C6C	ISA wait register

Address	Chip in Use
C6F	Other control registers
CA2 - CA3	IPMI (MPI KCS interface)
CA4 - CA5	IPMI (SMI interface)
CA6 - CA7	IPMI (SCI/SW1 interface)
CD6	Power management index register
CD7	Power management data register
CF8, CFC	PCI configuration space
CF9	Reset control
F50 - F58	General chipset
FE00 - FE3F	Chipset
BAR4+00 - 0F	EDMA2 PCI base address register 4

*1 Hexadecimal notation

*2 The I/O port address of a PCI device is set according to its type and number.

Appendix D

Installing Windows Server 2003

This section describes the procedures for installing Windows Server 2003 without using Express Setup tool.

BEFORE INSTALLING Windows Server 2003

Please read carefully the following information BEFORE commencing your Windows Server 2003 Installation.

Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

Updating System

If you change the configuration of the system, update your system with NEC EXPRESSBUILDER CD-ROM attached to your system.

Disk Configuration (Concerning the area displayed as 'MAINTE_P')

In disk area, an area displayed as 'MAINTE_P' may exist. This area is maintenance partition for saving configuration information and utilities. Please do not delete the area.

Re-installing to the Hard Disk which has been upgraded to Dynamic Disk

If you want to leave the existing partition when installing the system on the hard disk upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

MO Device

If you specify the file system as NTFS with MO Device connected during the installation, the file system will not be converted normally. Disconnect MO Device and restart the installation from the beginning.

Media such as DAT

During the OS installation, do not attach the unnecessary media for OS installation to the system, such as DAT.

Partition Size

The minimum required partition size for installation of Windows Server 2003 is:

2900MB + Paging file size + Dump file size
Paging file size (recommended) = installed memory * 1.5
Dump file size = Installed memory size + 12 MB

IMPORTANT:

- The above paging file size is necessary for collecting debug information (memory dump). If you set the default value of paging file size smaller than the 'recommended' value, the accurate debug information(memory dump) may not be collected.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if installed memory size is 512MB, the minimum required partition size is

2900MB + (512MB * 1.5) + (512MB + 12MB) = 4192MB.

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

 (If the disk does not have enough free space to enable the file size to be written, then after installing the system using the "Size required for installation + Paging file size," install an additional new disk.)

INSTALLING Windows Server 2003

Preparations for Installation

- NEC EXPRESSBUILDER CD-ROM
- Microsoft Windows Server 2003 Standard Edition (CD-ROM) or Microsoft Windows Server 2003 Enterprise Edition (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER

Creating "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER"

Before installing, create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER.

> **NOTE:** If you have already "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003, you do not need to create it again.

You can create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER with the following two procedures.

- Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

 If you have only NEC Express5800 Server to create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER, use this procedure.

 If Windows Server 2003 or Windows NT 4.0 can be operated on NEC Express5800 Server, you can use the other procedure described later.

 Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.
4. Press the RESET switch or press Ctrl, Alt and Delete to reboot the server .(You may also turn off and then on again to reboot the server.)

 The system will boot from the CD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create Support Disk] from [Tools].
6. Select [Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER] from [Create Support Disk] menu.

7. Insert a floppy disk into the floppy disk drive according to the instruction on the screen.

 Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER will be created.

 Write-protect and attach a label, then keep it safely.

- Create from [Master Control Menu]

 [Master Control Menu] runs on the following operating systems.

 – Windows Server 2003
 – Windows 2000
 – Windows Me/98/95
 – Windows NT 4.0
 – Windows XP

 You can create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER from [Master Control Menu], if you have the computer on which the above operating systems operate.

 Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Run Windows Me/98/95, or Windows 2000, Windows Server 2003, Windows NT 4.0, Windows XP.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.

 [Master Control Menu] will appear.
4. Click on [Setup] with left mouse button and click [Make OEM-DISK] and then [for Windows Server 2003].

 NOTE: You can do the same operation with the menu appeared by the Right-click.

5. Insert the floppy disk into the floppy disk drive according to the message.

 Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER will be created.

 Write-protect and attach a label, then keep it safely.

Windows Server 2003 Clean Installation

This section explains how to perform a clean installation of Windows Server 2003.

1. Turn on the system power.
2. Insert the Windows Server 2003 CD-ROM into the CD-ROM drive.
3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

 After a bootable operating system has been installed on the hard disk, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

 If no bootable operating system exists on the hard disk, this step is unnecessary.

 The Windows Server 2003 setup screen will appear.

 If the screen is not displayed, **Enter** was not pressed properly.

 Begin after turning on the system power again.
4. Press **F6** in a few seconds when the window is in either of the following states.
 - "Setup is inspecting your computer's hardware configuration ..." is displayed.
 - A screen with a solid blue background is displayed.

 IMPORTANT: There is no visible indication on screen when **F6** has been pressed.
5. When the following message is displayed, press **S**.

   ```
   Setup could not determine the type of one or more mass storage devices
   installed in your system, or you have chosen to manually specify an adapter.
   Currently, Setup will load support for the following mass storage devices.
   ```

 The following message is displayed.

   ```
   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   *Press ENTER when ready.
   ```
6. Insert the Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

 A list of mass storage devices is displayed.

 Select the [Adaptec Ultra320 SCSI Cards (WinXP/Server 2003 IA-32)] and press **Enter**. Then, it returns to the screen of step 5.

7. If the optional board is installed, select the proper SCSI Adapter and press **Enter**.
 - MegaRAID SCSI 320-2 RAID Controller Driver (When N8103-81F board is installed.)

Continue performing tasks according to the subsequent messages that appear.

For details, refer to "Getting Started".

After installation is completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of this manual.

Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2003 is written.

NOTES:

- Execute the activation within 30 days. System may be locked after 30 days is passed.
- COA label may be attached to your server.

Updating the System

To ensure normal system operation you should update your system using the following procedures.

1. Logon to the system using the administrator account or other account which is a member of the Administrators group.
2. Insert the NEC EXPRESSBUILDER CD-ROM into CD-ROM drive.

 Master Control Menu is automatically appeared on the screen.
3. Click on [Setup] with left mouse button and click on [Update NEC Express5800 system] section.
4. Continue your work for system update as the following message.
5. Click on [Restart Computer] to restart the system.
6. Remove the NEC EXPRESSBUILDER CD-ROM from the CD-ROM drive immediately after clicking on [Restart Computer]

IMPORTANT: If you change the configuration of the system (by adding or removing hardware or Operating system software components) or repair the system, you must run the system update again.

Upgrade installation

NOTE: If you are using N8103-56F, please carry out after removing.

1. Procedures below upgrade the installed Windows 2000 to Windows Server 2003.
2. Power on the system and start Windows 2000.
3. Log on as an administrator.
4. Insert the Windows Server 2003 CD-ROM into the CD-ROM drive.

 Then, [Select an operation] dialog will appear.

 NOTE: If the [Select an operation] dialog box does not appear, start \SETUP.EXE from CD-ROM drive.

5. Select [Install Windows Server 2003].

 Then, a dialog box asks to select the upgrade or clear installation.

6. Select "Upgrade (recommended)" and click the Next.

 Follow the messages and continue. The system will automatically restart after copying the files.

 NOTE: You can leave the Windows Server 2003 CD-ROM in CD-ROM drive.

7. If a disk array controller is attached to the device, press **F6** while a message, "Setup is inspecting your computer's hardware configuration...", is on the screen.

 IMPORTANT: There is no visible indication on screen when **F6** has been pressed.

8. When the following message is displayed, press **S**.

   ```
   Setup could not determine the type of one or more mass storage devices
   installed in your system, or you have chosen to manually specify an adapter.
   Currently, Setup will load support for the following mass storage devices.
   ```

 The following message is displayed.

   ```
   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   *Press ENTER when ready.
   ```

9. Insert the Windows Server 2003 OEM-DISK for EXPRESSBUILDER into the floppy disk drive, and press **Enter**. A list of SCSI adapters will be displayed.

10. If the optional board is installed, select the proper SCSI Adapter and press **Enter**.

– MegaRAID SCSI 320-2 RAID Controller Driver (When N8103-81F board is installed.)

Continue performing tasks according to the subsequent messages that appear.

11. Update the system.

12. Install the driver and make detailed settings.

- SCSI controller (N8103-56F)

 If your system has a controller (N8103-56F), system error will occur during the upgrade installation to Windows 2003.

 Disconnect SCSI controller and restart the upgrade installation from the beginning.

- If PROSet is already installed, uninstall the PROSet before upgrading.

 If the teaming function is enabled, disable the function before uninstalling PROSet.

- During upgrade installation, [Disk Insert] dialog box may appear.

 If it appears, click Cancel.

- When upgrade installation is completed,[Device Driver Wizard] dialog box may appear.

 If it appears, click Cancel, then update the system.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

PROSet

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhance throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive.
2. The [Windows Explorer] dialog starts.

 * The procedure in the case of the standard start menu

 Click Start menu and click [Windows Explorer].

 * The procedure in the case of the classic start menu

 Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "PROSet.exe" in the following directory.

 CD-ROM DriveLetter:\WINNT\DOTNET\BC11\PROSet\WS03XP32

 The [Intel(R) PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Choose "Typical" and click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finish].
9. Restart the system.

Network Driver

Specify the details of network driver.

Two standard network drivers that are mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

[When PROSet is not installed]

1. The [Local Area Connection Properties] dialog box appears.

 * The procedure in the case of the standard start menu

 1. Click Start menu, Click [Control Panel], Click [Network Connections], and Click [Local Area Connection].

 * The procedure in the case of the classic start menu

 1. Click Start menu, Click [Settings] and Click [Network Connections].

 The [Network Connections] dialog box appears.

 2. Right-click [Local Area Connection] and click [Properties] from pop-up menu.

2. Click [Configure].

 The property dialog box for network adapter appears.

3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.

4. Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel PROSet] dialog box appears.

 * The procedure in the case of the standard start menu

 Click Start menu, point to [Control Panel] and click [Intel PROSet].

 * The procedure in the case of the classic start menu

 1. Click Start menu, point to [Settings] and click [Control Panel].
 2. Double-click [Intel(R) PROSet] on the [Control Panel] window.

2. Click [(Network Adapter Name)] in the list.

3. Click the [Speed] and specify the [Link Speed & Duplex Settings] value the same as the value specified for HUB.

4. Click [Apply] and click [OK].

Specify the other network driver with the same progress above.

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

NOTE: We recommend you to add "Network Monitor" at "Adding Services".

"Network Monitor" can monitor frames (or packets) sent or received by a computer on which "Network Monitor" is installed. This is an effective tool for analyzing network faults.

For information about the installation procedure, see Chapter 6.

Re-install the Network Driver

The network driver will be installed automatically.

Installing SCSI Controller Driver

If you utilize SCSI controller driver (N8103-65F/75), install it according to the following procedure:

1. Start [Device Manager] from [Start] menu → [Control Panel]→ [Administrative Tools] → [Computer Management].
2. Double click the SCSI Controller driver which Device Manager lists as unknown device.
3. Click [Update Driver].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select "Don't search. I will choose the driver to install" and click [Next].
6. Click [Have Disk..].
7. Insert "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, enter "a:\" into "copy manufacturer's file from:" and click [OK].
8. Specify the following driver and click [Next].
 - [INITIO INI-A10XU2W PCI SCSI Controller](When N8103-65F board is installed.)
 - [Adaptec SCSI Card 29320ALP - Ultra320 SCSI](When N8103-75 board is installed.)

The installation of the driver is completed.

Restart the system according to the message appeared on the screen.

SETTING FOR COLLECTING MEMORY DUMP (DEBUG INFORMATION)

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix E

Installing Windows 2000

This section describes the procedures for installing Windows 2000 without using Express Setup tool.

BEFORE INSTALLING Windows 2000

Please read carefully the following information BEFORE commencing your Windows 2000 Installation.

Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

Updating System

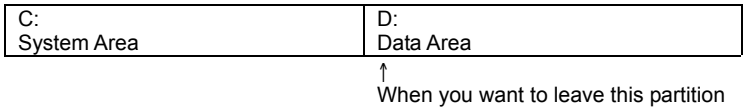
If you change the configuration of the system, update your system with NEC EXPRESSBUILDER CD-ROM attached to your system.

Disk Configuration (Concerning the area displayed as 'MAINTE_P')

In disk area, an area displayed as 'MAINTE_P' may exist. This area is maintenance partition for saving configuration information and utilities. Please do not delete the area.

Re-installing to the Hard Disk which has been upgraded to Dynamic Disk

If there is other partition than the partition for OS installation and you want to leave it when installing the system on the hard disk upgraded to Dynamic Disk, note the following issue:



- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

MO Device

If you specify the file system as NTFS with MO Device connected during the installation, the file system will not be converted normally. Disconnect MO Device and restart the installation from the beginning.

Media such as DAT

During the OS installation, do not attach the unnecessary media for OS installation to the system, such as DAT.

Partition Size

The minimum required partition size for installation of Windows 2000 is:

1000MB + Paging file size + Dump file size

Paging file size (recommended) = installed memory * 1.5

Dump file size = Installed memory size + 12 MB

IMPORTANT:

- The above paging file size is necessary for collecting debug information (memory dump). If you set the default value of paging file size smaller than the 'recommended' value, the accurate debug information(memory dump) may not be collected.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if installed memory size is 512MB, the minimum required partition size is

1000 + (512*1.5) + (512+12) = 2292MB.

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

 (If the disk does not have enough free space to enable the file size to be written, then after installing the system using the "Size required for installation + Paging file size," install an additional new disk.)

INSTALLING Windows 2000

Preparations for Installation

- NEC EXPRESSBUILDER CD-ROM
- Microsoft Windows 2000 Server(CD-ROM) or Microsoft Windows 2000 Advanced Server (CD-ROM)
- Windows 2000 Service Pack (CD-ROM)
- User's Guide
- Getting Started
- Windows 2000 OEM-DISK for NEC EXPRESSBUILDER

Creating "Windows 2000 OEM-DISK for NEC EXPRESSBUILDER"

Before installing, create Windows 2000 OEM-DISK for NEC EXPRESSBUILDER.

> **NOTE:** If you have already "Windows 2000 OEM-DISK for NEC EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows 2000, you do not need to create it again.

You can create Windows 2000 OEM-DISK for NEC EXPRESSBUILDER with the following two procedures.

- Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

 If you have only NEC Express5800 Server to create Windows 2000 OEM-DISK for NEC EXPRESSBUILDER, use this procedure.

 If Windows 2000 can be operated on NEC Express5800 Server, you can use the other procedure described later.

 Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.
4. Press the RESET switch or press Ctrl, Alt and Delete to reboot the server .(You may also turn off and then on again to reboot the server.)

 The system will boot from the CD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create Support Disk] from [Tools].
6. Select [Windows 2000 OEM-DISK for NEC EXPRESSBUILDER] from [Create Support Disk] menu.

7. Insert a floppy disk into the floppy disk drive according to the instruction on the screen.

 Windows 2000 OEM-DISK for NEC EXPRESSBUILDER will be created.

 Write-protect and attach a label, then keep it safely.

■ Create from [Master Control Menu]

[Master Control Menu] runs on the following operating systems.

- Windows Me/98/95
- Windows 2000
- Windows Server 2003
- Windows NT 4.0
- Windows XP

You can create Windows 2000 OEM-DISK for NEC EXPRESSBUILDER from [Master Control Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Run Windows Me/98/95, or Windows 2000, Windows Server 2003, Windows NT 4.0, Windows XP.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.

 [Master Control Menu] will appear.
4. Click on [Setup] with left mouse button and click [Make OEM-DISK] and then [for Windows 2000].

 NOTE: You can do the same operation with the menu appeared by the Right-click.

5. Insert the floppy disk into the floppy disk drive according to the message.

 Windows 2000 OEM-DISK for NEC EXPRESSBUILDER will be created.

 Write-protect and attach a label, then keep it safely.

Windows 2000 Clean Installation

This section explains how to perform a clean installation of Windows 2000.

1. Turn on the system power.
2. Insert the Windows 2000 CD-ROM into the CD-ROM drive.
3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

 After a bootable operating system has been installed on the hard disk, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

 If no bootable operating system exists on the hard disk, this step is unnecessary.

 The Windows 2000 setup screen will appear.

 If the screen is not displayed, **Enter** was not pressed properly.

 Begin after turning on the system power again.
4. Press **F6** in a few seconds when the window is in either of the following states.
 - "Setup is inspecting your computer's hardware configuration ..." is displayed.
 - A screen with a solid blue background is displayed.

 IMPORTANT: There is no visible indication on screen when **F6** has been pressed.
5. When the following message is displayed, press **S**.

   ```
   Setup could not determine the type of one or more mass storage devices
   installed in your system, or you have chosen to manually specify an adapter.
   Currently, Setup will load support for the following mass storage devices.
   ```

 The following message is displayed.

   ```
   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   *Press ENTER when ready.
   ```
6. Insert Windows 2000 OEM-DISK for NEC EXPRESSBUILDER into the floppy disk drive and press **Enter**.

 Select the [Adaptec Ultra320 SCSI Cards (Win2000)] and press **Enter**.

 Then, it returns to the screen of step 5.

7. If the optional board is installed, select the proper SCSI Adapter and press **Enter**.
 - MegaRAID SCSI 320-2 Controller Driver (When N8103-81F board is installed.)

Continue performing tasks according to the subsequent messages that appear.

For details, refer to "Getting Started".

After installation is completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of this manual.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

PROSet

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhance throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive.
2. The [Windows Explorer] dialog starts.
3. Run "PROSet.exe" in the following directory.

 CD-ROM DriveLetter:\WINNT\W2K\BC11\PROSet\WIN2K

 The [Intel(R) PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Choose "Typical" and click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finish].
9. Restart the system.

Network Driver

Specify the details of network driver.

Two standard network drivers that are mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

[When PROSet is not installed]

1. The [Local Area Connection Properties] dialog box appears.

 Click Start menu, Click [Settings] and Click [Network Connections].

 The [Network Connections] dialog box appears.

2. Right-click [Local Area Connection] and click [Properties] from pop-up menu.
3. Click [Configure].

 The property dialog box for network adapter appears.

4. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
5. Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel PROSet] dialog box appears.

 Click Start menu, point to [Settings] and click [Control Panel].

2. Double-click [Intel(R) PROSet] on the [Control Panel] window.
3. Click [(Network Adapter Name)] in the list.
4. Click the [Speed] and specify the [Link Speed & Duplex Settings] value the same as the value specified for HUB.
5. Click [Apply] and click [OK].

Specify the other network driver with the same progress above.

Re-install the Network Driver

After installing OS and deleting the network drivers, if you want to re-install the network drivers, follow the procedure below.

1. Restart OS and logon to your system.
2. [Upgrade Device Driver Wizard] dialog box appears.

 Click [Next].
3. Confirm that the [Search for a suitable driver for my device (recommended)] radio button is selected and click [Next].
4. Select the [Specify a location] check box and deselect other check boxes.

 Click [Next].
5. Other [Upgrade Device Driver Wizard] dialog box opens.

 When using [Intel(R) PRO/1000 XT network connection], specify [<CD-ROM drive letter>:\WINNT\W2K\BC11\PRO1000\WIN2K].

 When using [Intel(R) PRO/100 network connection], specify [<CD-ROM drive letter>:\WINNT\W2K\BC11\PRO100\WIN2K]

 Then click [OK].
6. Click [Next].
7. Click [Finished].
8. Other [Upgrade Device Driver Wizard] dialog box appears.

 Refer to the step 2 to 7 to install.

 After re-installing the network drivers, the link speed and Duplex mode need to be specified.

 Refer to "Network Driver" described earlier.

Graphics Accelerator Driver

Standard graphics accelerator driver that are mounted will be installed automatically. The following is the procedure when it is necessary to install manually.

If you want to utilize optional Graphics Accelerator Driver board, follow the document attached to the board to install the driver.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive.
2. Run "Setup.exe" in the following directory.

 <CD-ROM Drive Letter>:\WINNT\W2K\VIDEO\setup.exe.

 Follow the message on the screen.

 When the message "Digital Signature Not Found" message appears, click on [Yes].
3. Remove the NEC EXPRESSBUILDER CD-ROM and restart the system following a message on the screen.

Installing SCSI Controller Driver

If you utilize SCSI controller driver (N8103-65F/75), install it according to the following procedure:

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double click the SCSI Controller driver which Device Manager lists as unknown device.
3. Click [Update Driver].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select "Don't search. I will choose the driver to install" and click [Next].
6. Click [Have Disk..].
7. Insert "Windows 2000 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, enter "a:\" into "copy manufacturer's file from:" and click [OK].
8. Specify the following driver and click [Next].
 - [INITIO INI-A10XU2W PCI SCSI Controller](When N8103-65F board is installed.)
 - [Adaptec SCSI Card 29320ALP - Ultra320 SCSI](When N8103-75 board is installed.)

The installation of the driver is completed.

Restart the system according to the message appeared on the screen.

SETTING FOR COLLECTING MEMORY DUMP (DEBUG INFORMATION)

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix F

Product Configuration Record Table

Use this table for information about setup and system environment change.

Hardware

Main Unit						
	Model name		Serial No.		Date Installed	
CPU						
#1	Clock		Serial No.		Date Installed	
#2	Clock		Serial No.		Date Installed	
#3	Clock		Serial No.		Date Installed	
#4	Clock		Serial No.		Date Installed	
Memory						
Group #1	Size		Serial No.		Date Installed	
Group #2	Size		Serial No.		Date Installed	
Group #3	Size		Serial No.		Date Installed	
Monitor						
	Type		Model name		Serial No.	
					Date Installed	
Hard Disk						
ID0	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
ID1	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
ID2	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
ID3	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
ID4	Type			Serial No.		
	Capacity			Date Installed		
	Type number					

Backup Device						
Slot 1	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
PCI Slot #1						
	Model name				Serial No.	
					Date Installed	
PCI Slot #2						
	Model name				Serial No.	
					Date Installed	
PCI Slot #3						
	Model name				Serial No.	
					Date Installed	
PCI Slot #4						
	Model name				Serial No.	
					Date Installed	
PCI Slot #5						
	Model name				Serial No.	
					Date Installed	
PCI Slot #6						
	Model name				Serial No.	
					Date Installed	
PCI Slot #7						
	Model name				Serial No.	
					Date Installed	
PCI Slot #8						
	Model name				Serial No.	
					Date Installed	
Printer						
	Model name				Serial No.	
	Manufacturer				Date Installed	
Additional Cabinet for Disk						
	Model name				Serial No.	
					Date Installed	
External Peripheral Device 1						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 2						
	Model name				Serial No.	
	Manufacturer				Date Installed	
Display						
	Model name				Serial No.	
	Manufacturer				Date Installed	
Keyboard						
	Model name				Serial No.	
	Manufacturer				Date Installed	
Mouse						
	Model name				Serial No.	
	Manufacturer				Date Installed	

Software

Firmware version				
OS Application of RUR media	 ☐ Apply	Name: Name:		Version: Version:
File system	☐ FAT ☐ Others (	☐ HPFS	☐ NTFS)	
Bundled software installed				
Licensed software installed				
Application running when a failure occurred				

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